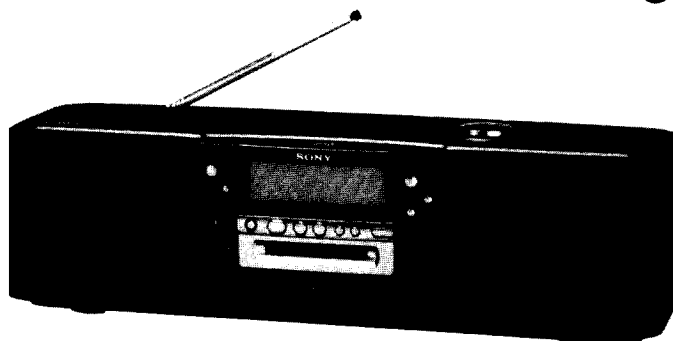


ZS-M1

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model



Model Name Using Similar Mechanism	MZ-1
Mechanism Deck Type	MT-MZ1-106
Optical Pick-up Block Type	KMS-130B

SPECIFICATIONS

MD recorder section

System	MiniDisc digital audio system
Laser diode properties	Material: GaAlAs Wavelength: $\lambda = 780$ nm Emission duration: continuous Laser output: less than 44.6 μ W (This output is the value measured at a distance of 200 mm from the lens surface on the optical pick-up block.)
Revolutions	400 rpm to 900 rpm (CLV)
Error correction	Advanced Cross Interleave Reed Solomon Code (ACIRC)
Sampling frequency	44.1 kHz
Modulation system	EFM (Eight-to-Fourteen Modulation)
Number of channels	2 stereo channels
Frequency response	20 to 20,000 Hz \pm 1 dB
Wow and Flutter	Below measurable limit

Radio section

Frequency range	FM: US, Canadian model 87.6 - 108 MHz Italian model 87.5 - 108 MHz Other countries 87.6 - 107 MHz AM: US, Canadian model 530 - 1710 KHz other countries 531 - 1602 KHz
IF	FM: 10.7 MHz AM: 450 kHz
Aerials	FM: Telescopic aerial AM: Loop aerial (supplied)

General

Speaker	Full-range: 8 cm dia., cone type, 6 Ω x 2
Inputs	OPTICAL DIGITAL IN (LINE) jack: Wavelength 660 \pm 30 nm LINE IN jack (stereo minijack): Sensitivity 440 mV
Outputs	Headphones jack (stereo minijack): For 32 - 64 Ω impedance headphones OPTICAL DIGITAL OUT (MD) jack: Wavelength 660 \pm 30 nm LINE OUT jack (stereo minijack): Rated output 380 mV Load impedance 47 k Ω

Power output	7.5 W + 7.5 W (100 - 10,000 Hz, at 6 Ω , 1% harmonic distortion)
Power requirements	For personal MD system: UK model: 240 V AC, 50 Hz European model: 220 - 230 V AC, 50 Hz US, Canadian model : 120V AC, 60Hz For remote commander: DC 3V, lithium battery (CR-2025) (1)
Power consumption	Canadian model 35W Other countries 30W
Dimensions	480 x 148 x 190 mm (w/h/d) (19 x 5 7/8 x 7 1/2 inches) incl. projecting parts
Mass	5.8 kg (12 lb 12 oz)
Supplied accessories	Mains lead (1) Remote commander (1) (RMT-CM1) AM loop aerial (1)

Design and specifications subject to change without notice.

Note

This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

Optional accessories

Stereo Headphones: MDR-D33, MDR-D55, MDR-D77
Line Cable (stereo mini-jack \leftrightarrow stereo mini-jack): RK-G136
Optical Cable: POC-5, POC-10, POC-15, POC-DA12, POC-MZ1
Recordable MDs: MDW-60, MDW-74
Carrying Case: CK-MD4
Filing Box: CK-MD10

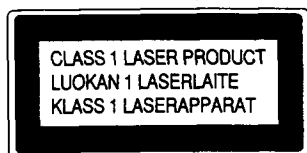
PERSONAL MINIDISC SYSTEM
SONY



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Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.



This Compact Disc player is classified as a CLASS 1 LASER product. The CLASS 1 LASER product label is located on the rear exterior.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK OR DOTTED LINE WITH MARK ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

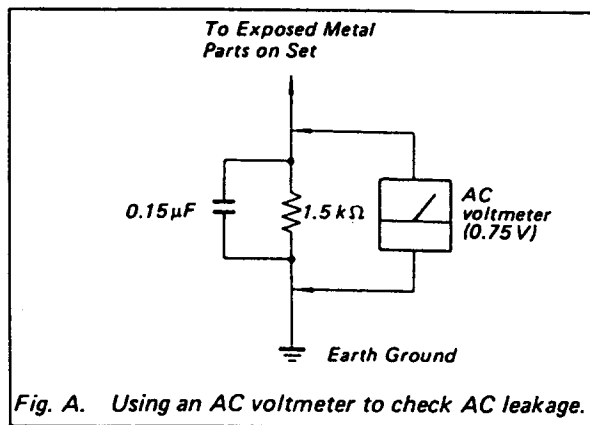


Fig. A. Using an AC voltmeter to check AC leakage.

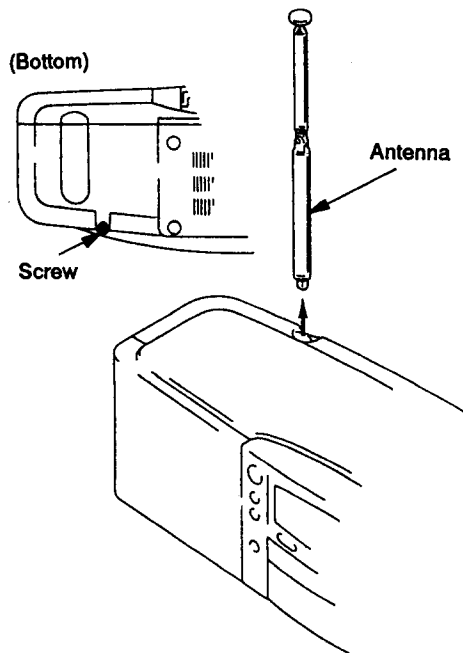
REPLACEMENT OF ANTENNA

Antenna can be replaced without disassembling the unit.

(Removal)

1. Remove the screw on the bottom of the unit.
2. Pull off the antenna.

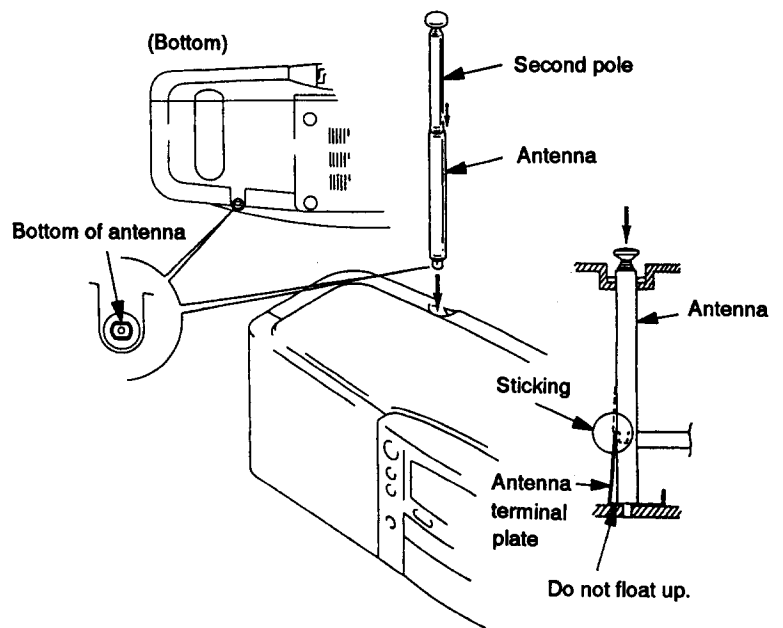
Removal



(Mounting)

1. Insert the antenna from the hole on the top.
- ※ For easy mounting, push in the second pole a little to prevent rotation.
- ※ Antenna may get stuck on a half way by interference with the antenna terminal board. In this case, move antenna back and forth for further insertion.
2. Meeting hole in the bottom of the unit with the bottom of the antenna, push in the antenna.
- Note:** Push in the antenna completely to ensure contact with antenna terminal board.
3. Tighten the screw.

Mounting



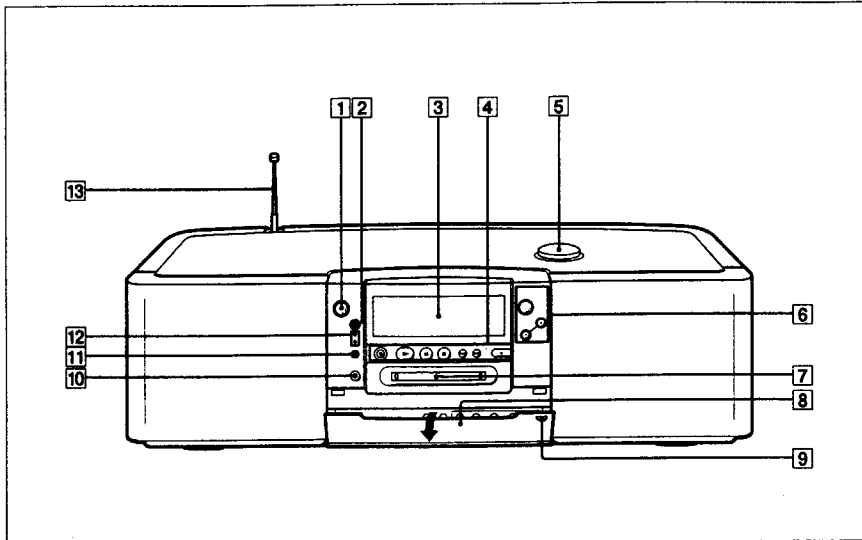
SECTION 1 GENERAL

This section is extracted from
instruction manual.

Looking at the Controls

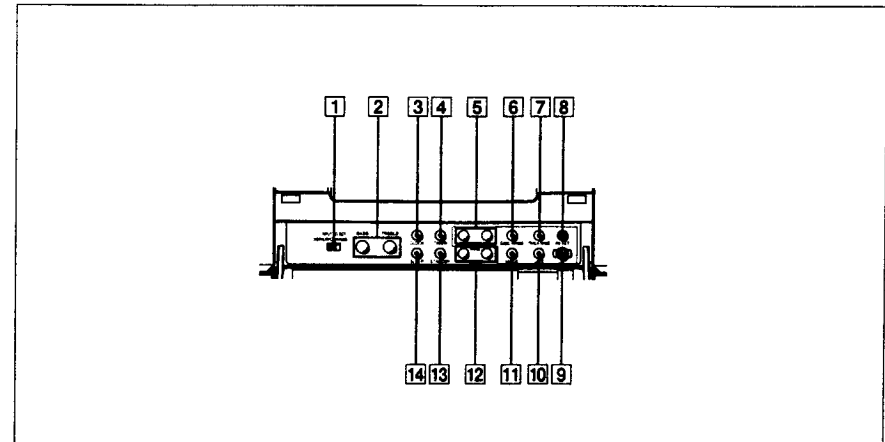
See pages in () for more details.

Top panel/Front panel



- | | |
|--|--|
| <p>1 POWER switch</p> <p>2 FUNCTION button
Press to select MD, RADIO or LINE as the source.</p> <p>3 Display window (7-E)</p> <p>4 MD operation buttons (14, 18, 20-E)
● Record
▶ Play
 Pause
■ Stop
◀◀ / ▶▶ AMS (Automatic Music Sensor)
▲ Eject</p> <p>5 VOLUME control</p> <p>6 RADIO operation buttons
BAND (30-E)
PRESET (31-E)</p> | <p>7 Disc compartment (12, 18, 20-E)</p> <p>8 Sub-control panel</p> <p>9 Sub-control panel OPEN ▼ tab</p> <p>10 PHONES (headphones) jack (stereo mini-jack)</p> <p>11 Remote sensor</p> <p>12 OPERATION and STANDBY indicators
The STANDBY indicator lights up to indicate that the player is connected to the mains. This indicator lights regardless of whether the power is on or off.</p> <p>13 Telescopic aerial (30-E)</p> |
|--|--|

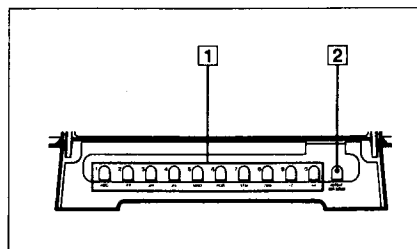
Behind the sub-control panel



- | | |
|---|--|
| <p>1 INPUT SELECT selector (19-E)</p> <p>2 Tone controls
BASS (low-frequency sound)
TREBLE (high-frequency sound)</p> <p>3 CLOCK button (10-E)</p> <p>4 TIMER button (35, 36, 37, 38-E)</p> <p>5 ◀◀ / ▶▶ SEARCH buttons (12-E)</p> <p>6 DISC NAME button (13-E)</p> <p>7 TRACK NAME button (13-E)</p> <p>8 RESET button (41-E)
Use only to eliminate instability in microcomputer control caused by variations in power supply characteristics.</p> | <p>9 EDIT button (22, 23, 24, 26, 27, 28-E)</p> <p>10 DATE button (13-E)</p> <p>11 MODE button (14, 15, 16, 31-E)</p> <p>12 TIME SET/TUNING buttons (30, 31, 35, 37-E)</p> <p>13 STANDBY button (36, 38-E)</p> <p>14 SLEEP button (34-E)</p> |
|---|--|

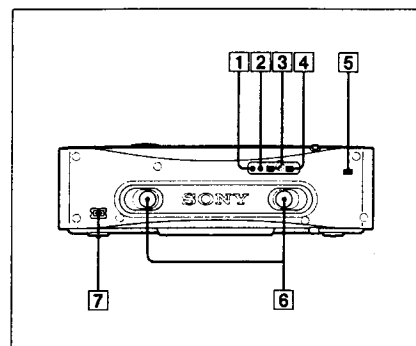
Looking at the Controls (continued)

On the sub-control panel



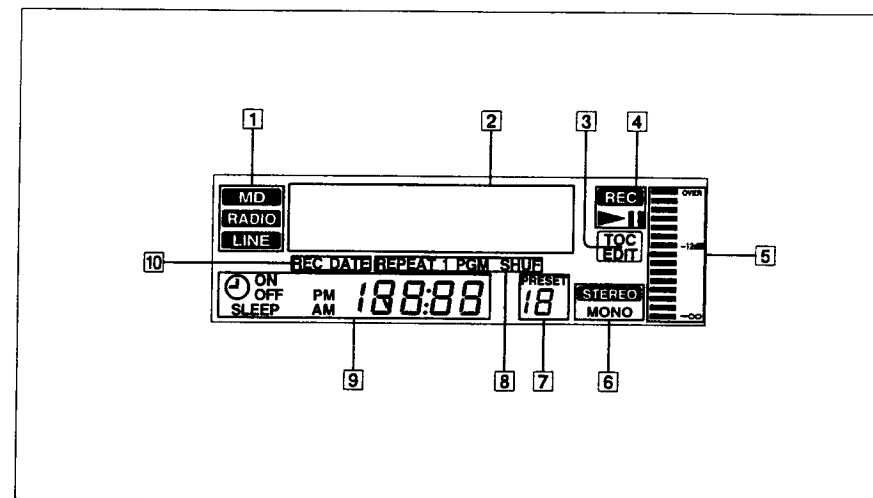
- 1 Numeric buttons (11, 13, 16, 31, 36, 38-E)
- 2 REPEAT/ENT/MEMO button (11, 16, 17, 31-E)

Front panel



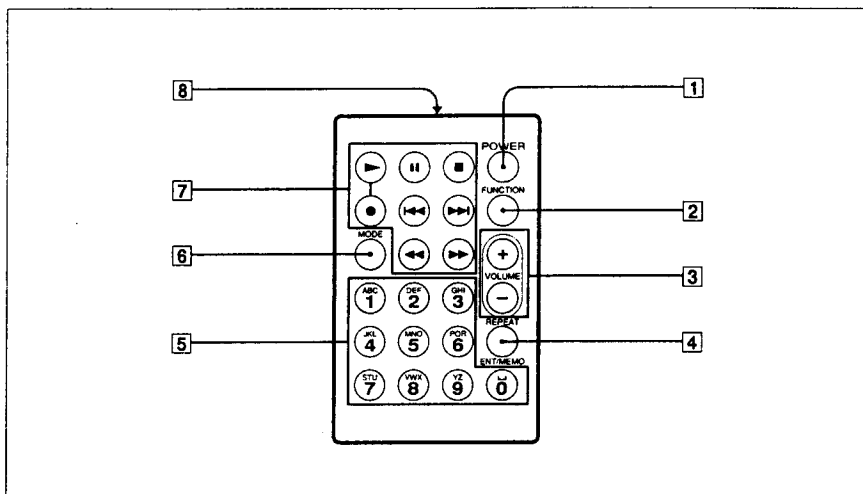
- 1 LINE OUT jack (39-E)
- 2 LINE IN jack (19-E)
- 3 OPTICAL DIGITAL OUT (MD) jack (39-E)
- 4 OPTICAL DIGITAL IN (LINE) jack (19-E)
- 5 AM EXT ANT (AM loop aerial) terminal (10-E)
- 6 Ducts for powerful bass sound
- 7 AC IN (AC power input) socket (9-E)

Display window



- 1 Function indicators
Indicates MD, RADIO or LINE as the current source.
- 2 Character information display
Displays the disc and track names, date and time.
- 3 TOC EDIT indicator
Lights up during MD recording or editing.
- 4 MD operation mode indicators
▶ indicates the MD is playing; ■■ indicates the MD has paused; REC indicates the MD is recording.
- 5 Level meter
Shows the signal level during MD recording and playback.
- 6 Radio mode indicator
STEREO lights up during stereo programme reception and MONO during monaural programme reception.
- 7 PRESET indicator
Lights up during setting or recall of preset radio stations (1 to 12).
- 8 Play mode indicators
1: lights during single-track play.
PGM: lights during programme play.
SHUF: lights during shuffle play.
REPEAT: lights when the repeat function is on.
- 9 Timer/frequency indicators
ON: Lights up with the timer-on time.
OFF: Lights up with the timer-off time.
⊙: Lights up when the timer is set.
SLEEP: Lights up when the sleep function is on.
FM-AM: Lights up with the corresponding station frequency during radio operation.
- 10 REC DATE/DATE indicators
REC DATE: Lights up with the recording date of the inserted MD.
DATE: Lights up with the current date.

Remote commander (card type)



Controls on the remote commander with the same name as those on the deck have the same function.

- 1 POWER switch
- 2 FUNCTION button
Selects MD, RADIO (FM), RADIO (AM) or LINE as the current source.
- 3 VOLUME buttons
- 4 REPEAT/ENT/MEMO button
- 5 Numeric buttons
- 6 MODE button
- 7 MD operation buttons
 - ▶ Play
 - ⏸ Pause
 - Stop
 - Record
 - ◀▶ AMS (Automatic Music Sensor)
 - ◀▶ Search
- 8 Command emitter
Point toward the remote sensor on the unit.

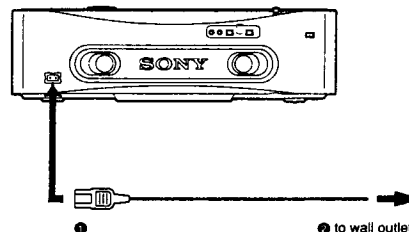
Notes on the remote commander

- To avoid malfunction, keep the commander away from direct sunlight or strong illumination.
- See *Installing the lithium battery in the remote commander* on page 9-E for instructions on changing the battery.

Preparing Power Sources

Connecting to house current

Insert one end of the supplied mains lead into the AC IN socket located at the rear of the player 1 and the other end into a wall outlet 2.



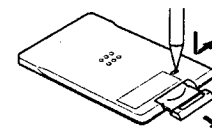
Note

Before unplugging the mains lead, be sure to turn the unit off by pressing the POWER switch. The unit will retain the previous clock (timer), MD and radio settings for about 10 minutes after you unplug the mains lead. If the unit is left unplugged for more than 10 minutes or if you failed to press POWER to turn the unit off before unplugging the mains lead, the settings and the current time and date are canceled. In this case, connect the mains lead to the wall outlet again and reenter the various settings.

Installing the lithium battery in the remote commander

Your remote commander comes with a factory installed lithium battery. When this battery becomes too weak for normal operations, replace it with a new one using the procedure below.

- 1 Press down on the notch with a pen tip and slide out the battery holder.



- 2 Install a new Sony CR-2025 lithium battery with the + (plus) side facing up.



- 3 Slide the holder back in.

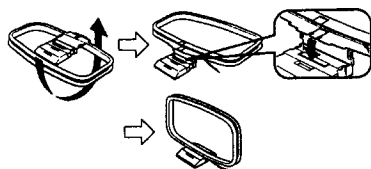
Warning!

- Keep the lithium battery out of the reach of children. Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to assure good contact.
- Be sure to install the battery with the correct polarity.
- Do not hold the battery with tweezers. Doing so may cause a short-circuit.
- Do not crush the battery or dispose of it in a fire. Doing so may cause it to explode. Carefully dispose of the used battery.

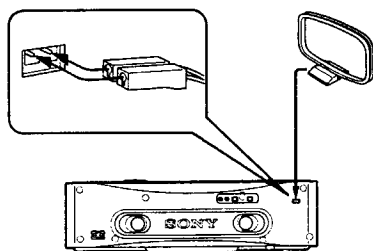
Connecting the AM Aerial

To receive AM stations, connect the AM loop aerial using the procedure below.

- 1 Prepare the aerial as shown below.



- 2 Connect the aerial to the AM EXT ANT terminal.

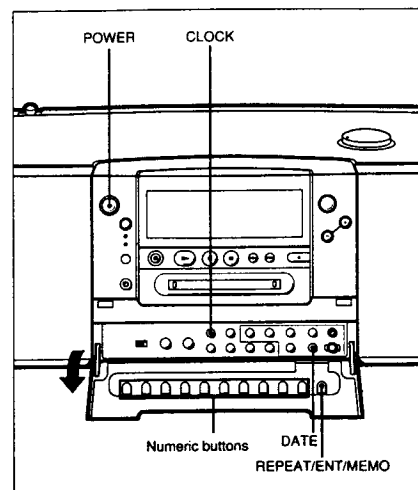


Note

To minimize noise interference from the player section, locate the AM loop aerial away from the player during AM programme reception.

Setting the Clock

In order to use the time and date stamp function for MD recordings, use the procedure below to set the system clock.



- 1 Press POWER.
Press FUNCTION to select MD or LINE.
(The clock cannot be set when RADIO is selected.)

- 2 Keep pressing CLOCK for about 4 seconds.
The first digit of the year flashes.

1992 11m01d
Clock set
DATE

- 3 Enter the current year by pressing the numeric buttons.
For example, to enter the year 1993, press 1, 9, 9 and 3.

1993 11m01d
Clock set
DATE

- 4 Press REPEAT/ENT/MEMO.
The year is stored in memory and the first digit of the month flashes.

1993 11m01d
Clock set
DATE

- 5 Repeat steps 3 and 4 and enter the current month and day.
In case of single-digit months or days, enter 0 first, then the corresponding digit.
After the day is stored in memory, set the time.

PM 12h00m00s
Clock set
DATE

- 6 Choose either AM or PM by pressing DATE, then press REPEAT/ENT/MEMO.
The first digit of the hour begins flashing.

PM 12h00m00s
Clock set
DATE

- 7 Enter the hour, then the minutes as you did for the month and day in steps 3 and 4.
Pressing REPEAT/ENT/MEMO after the minutes setting starts the operation of the clock.

'93y01m02d
PM 03h45m01s
DATE

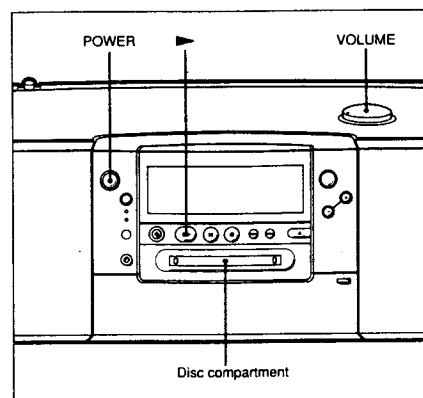
If you make a mistake while setting the time and date
Press ■, then start again from the step 2. To skip items that do not require resetting, press TIME SET (+) and REPEAT/ENT/MEMO until the desired item begins flashing.

To display the current date
Press DATE in stop mode. The date display is canceled after 10 seconds or when you press DATE again. However, the current date cannot be displayed when RADIO is selected.

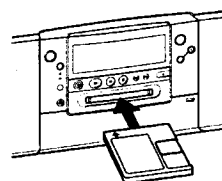
To display the time using a 24-hour system
Press DATE in stop mode to display the time, then press REPEAT/ENT/MEMO. You can set the clock using the 24-hour system as well. However, the current date cannot be displayed when RADIO is selected.

Playing an MD (Normal Play)

Follow the procedure below to listen to an MD.



- 1 Press **POWER**.
You can also turn the player on by inserting an MD or pressing **▶**.
- 2 With the label side up and the arrow pointing toward the opening, slide the MD into the disc compartment until the recorder grips it.



MY DISC
012tracks



MY DISC
74m00s

- 3 Press **▶**.
The MD starts playing.

No001 00m01s
MY SONG

To	Press
Search backward	◀◀
Search forward	▶▶
Interrupt play momentarily	
Resume play after pause	
Stop play	■
Eject the MD	⬆

* "End!" flashes when the disc reaches its end. Press **■** or **◀◀** to turn off the indicator.

Note on sound volume

Compared to analog systems, the low noise level of the MD system makes it hard to gauge the sound volume when the signal level is very low. To prevent the unexpected output of high-volume sound, adjust the volume gradually from a low level.

Locating the beginning of a track (AMS*)

Use the AMS buttons to quickly find the beginning of a track while the MD is playing or in pause mode.



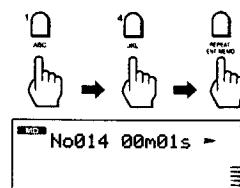
To find	Press
The beginning of the current or preceding tracks	◀◀
The beginning of the next or succeeding tracks	▶▶

Holding down either AMS button in playback or pause mode causes the unit to skip to the start of each successive track until either the button is released or the last track reached. When the button is released, the unit begins playback of the displayed track or enters pause mode, depending on the original mode.

* AMS: Automatic Music Sensor

Specifying a track directly

You can quickly find specific tracks during playback by directly specifying the track number using the numeric buttons.



Enter the desired track number by pressing the numeric buttons, then press **REPEAT/ENT/MEMO**.

If the **PGM** indicator in the display window is on Press **MODE** to turn off the indicator.

Displaying disc and track names

By pressing the **DISC NAME**, **TRACK NAME** or **DATE** button when an MD is playing or in pause mode, you can display the respective label information recorded on that MD. The previous display appears again after 10 seconds have passed or when you press the button again.



To display	Press
The name of MD	DISC NAME
The name of the current track	TRACK NAME
The recording date and total recorded time (if not a premastered MD)	DATE

Notes

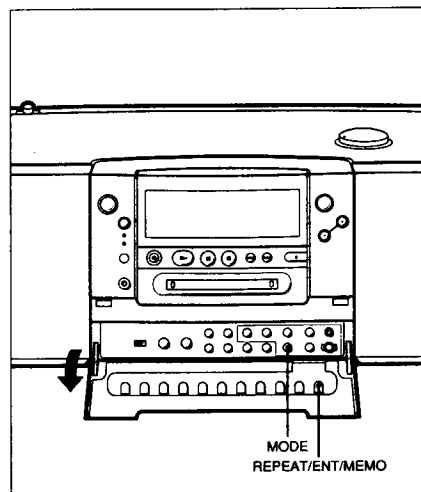
- Nothing is displayed if no information has been recorded on the MD (premastered or recorded).
- Pauses during the recording of a track are not included in the total recording time displayed during playback.

When label information exceeds the displayable length

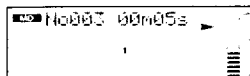
The display window can show only 12 characters at a time. To see a title of 13 characters or more, hold down the button and the title will scroll from the 13th character on. After scrolling, the first 12 characters are displayed again.

Playing a Single Track

Use the following procedure to play back a single track once.



Press MODE until "1" goes on.



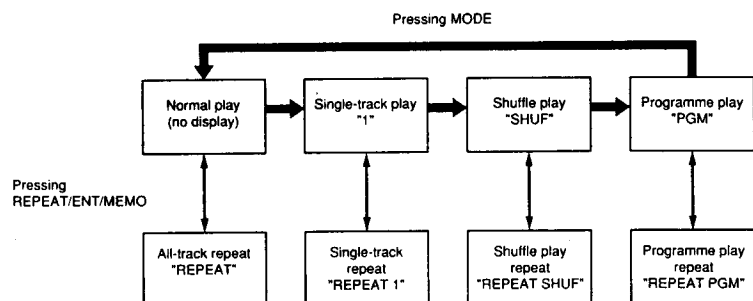
The unit stops after the selected track has finished. If "REPEAT" is also lit in the display window, the track will play continuously. (See *Playing Tracks Repeatedly* on page 17-E.)

To cancel single-track play
Press MODE until "1" goes off.

To stop single-track play
Press ■.

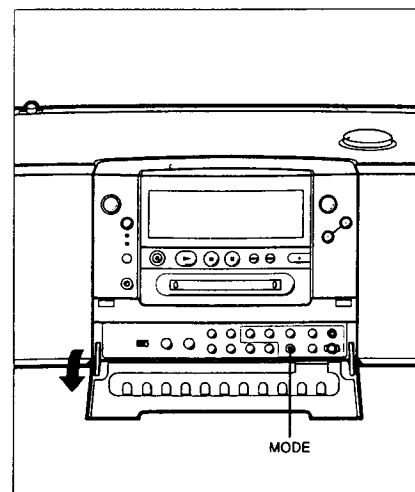
Quick guide to playing mode selection

The mode and display window changes in the following order each time you press MODE or REPEAT/ENT/MEMO:



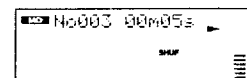
Playing Tracks in Random Order (Shuffle Play)

Use shuffle play to play back all tracks on an MD in random order.



While the MD is playing, press MODE until "SHUF" appears in the display window.

If "REPEAT" is on, press REPEAT/ENT/MEMO to turn it off. Shuffle play will start after the current track finishes. The word "access" flashes while shuffle play searches for the next track to play.



To cancel shuffle play
Press MODE until "SHUF" goes off.

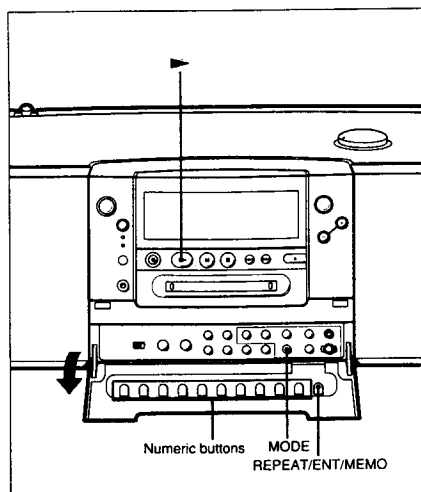
To stop shuffle play
Press ■.

Note

When you press ◀◀, the MD returns to the beginning of the current track only.

Playing Tracks in a Specific Order (Programme Play)

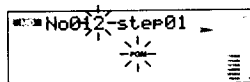
Programme play allows you to specify the playback order of up to 21 tracks.



- 1 While the MD is playing, press MODE until "PGM" flashes in the display window.
If "REPEAT" is on, press REPEAT/ENT/MEMO to turn it off.
The MD will continue to play as you enter the desired track numbers.



- 2 Enter the desired track number using the numeric buttons.
For example, to enter the 12th track, press 1 and 2.

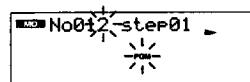


- 3 Press REPEAT/ENT/MEMO.
The entered track number is programmed.

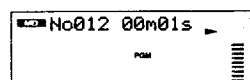


- 4 Repeat steps 2 and 3 within 10 seconds to enter other track numbers up to 21 tracks.
If no button is pressed within 10 seconds, programme mode is automatically canceled.

- 5 Press REPEAT/ENT/MEMO within 10 seconds after step 4.
The first track number of the new programme appears.
If necessary, verify the track numbers and make corrections (see page 17-E). If information from the previous programme is found, press 0, then REPEAT/ENT/MEMO to erase all old track numbers.

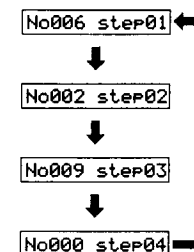


- 6 Press ► (play) within 10 seconds after step 5.
Programme play starts from the first track of the programme.



Checking the order of entered tracks

With "PGM" on and prior to playback, press REPEAT/ENT/MEMO to display each track number of the programme in sequence. After all track numbers have appeared, the programme cycles back to the first track number.
(In the diagram below, track numbers 6, 2 and 9 have been programmed.)



(No track numbers were entered after step 3.)

To change a track in the programme

During track number verification (see *Checking the order of entered tracks* above), you can freely modify any track number merely by entering the new number with the numeric buttons, then pressing REPEAT/ENT/MEMO to save it.

To cancel programme play

Press MODE until "PGM" goes off. The programme remains in memory until the MD is ejected or for about 10 minutes after unplugging the mains lead (see *Note* on page 9-E).

To stop programme play

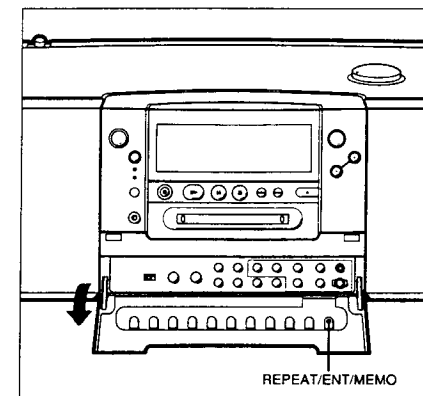
Press ■ (stop).

Note

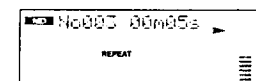
You cannot programme more than 21 tracks. After the 21st step, the programme cycles back to the first step and any new entries will sequentially replace previously programmed track numbers starting from step one.

Playing Tracks Repeatedly

The repeat function can be used for repeated playback in normal, single track, shuffle or programme play mode.



While the MD is playing, press REPEAT/ENT/MEMO until "REPEAT" goes on.



Playing mode	When "REPEAT" is on
Normal play	All the tracks are played again.
Single track play	The same track is played repeatedly.
Shuffle play	Shuffle play repeats with a different track order each time.
Programme play	The programme plays repeatedly.

To cancel the repeat function

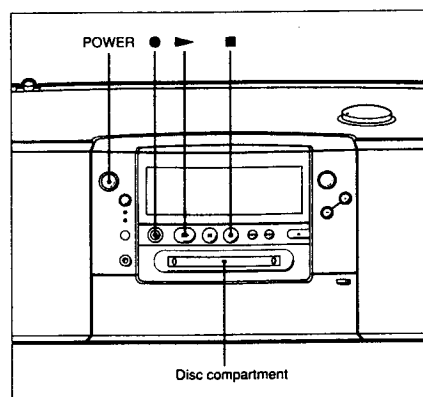
Press REPEAT/ENT/MEMO until "REPEAT" goes off.

To stop repeated playback

Press ■ (stop).

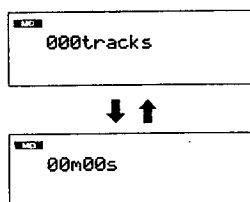
Recording From the Radio

With your MiniDisc unit you can record from the radio in a digital format. For this you must use a recordable MD (see *What Is a MiniDisc?* on page 44-E).



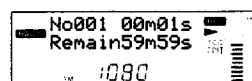
1 Press POWER.

2 With the label side up and the arrow pointing toward the opening, slide the MD into the disc compartment until the unit grips it.
The disc name (if labeled) appears on the first line while the total number of recorded tracks and the recording time alternately appear on the second line.



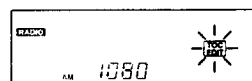
3 Press BAND to select the band and TUNING (+/-) to select the station. (For details on tuning, see *Listening to the Radio* on page 30-E.)

4 While pressing (record), press (play).
(record) goes on and recording starts with the recording level automatically adjusted.



5 Press (stop) when you want to stop recording. "TOC EDIT" begins to blink. After (record) goes off, (record) goes on again. After about a second, "TOC EDIT" and (record) go off and the recording is completed. Wait until "TOC EDIT" goes off to perform another operation.
The next recording to be performed begins on a new track on the MD.

Caution
Do not jog the unit or pull out the mains lead while "TOC EDIT" is flashing.



To	Press
Pause	II
Cancel pause	II
Eject the MD	▲

* The TOC (Table of Contents) contains the beginning and ending addresses of all tracks on the MD.

Locating a desired point during playback

Adding a track mark at a desired point during recording (see page 21-E) will allow you to quickly locate that point later during playback.

Note on recording AM stations

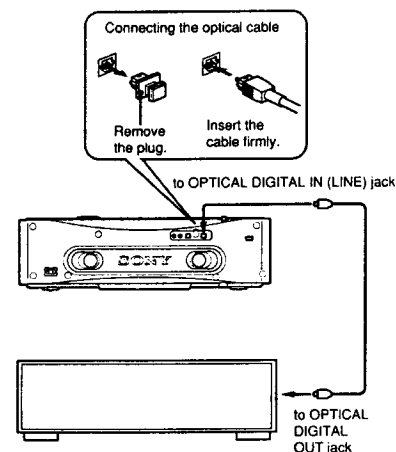
To record AM stations with less noise, adjust the direction of the supplied AM loop aerial or locate the aerial away from the player.

Connecting Other Sound Sources

Before you can record from other sound sources, you must connect the unit to a sound source. The sound source can be one of two types: a digital source (such as another MD player, CD player or digital amplifier) or an analog source (such as a cassette player, radio or analog amplifier).

Hooking up a digital source

1 Use a POC-5 optical cable (not supplied) to connect a digital source to the OPTICAL DIGITAL IN (LINE) jack.



2 Set INPUT SELECT behind the sub-control panel to DIGITAL (REC).

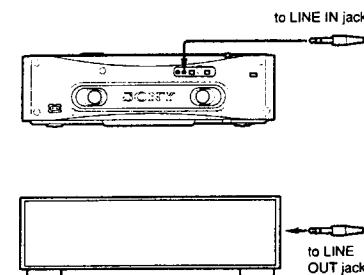


Notes on MD recording

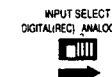
- You cannot use the digital input jack (OPTICAL DIGITAL IN) to record digital sources with a sampling frequency different from that of the MD section (such as DAT (32 kHz, 48 kHz) or BS). In these cases, use the analog input jack (LINE IN) as described in the following section *Hooking up an analog source*.
- Do not touch the terminals of the optical cable since contamination from the fingers may interfere with the signal output.
- Since your MD unit uses SCMS (Serial Copy Management System), MDs recorded through the digital input jack (OPTICAL DIGITAL IN) cannot be used to make subsequent copies to other MDs. Copies of home-recorded MDs can only be made through the analog output jack (LINE OUT).

Hooking up an analog source

1 Connect an RK-G136 (not supplied) to connect an analog source to the LINE IN jack.

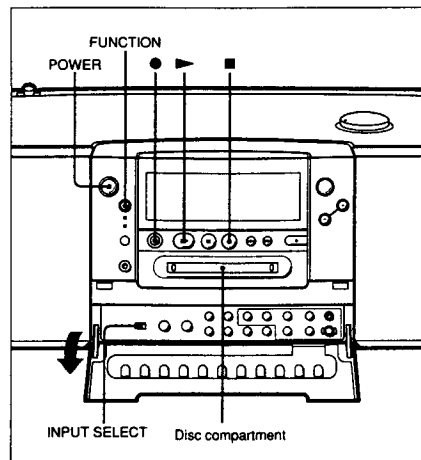


2 Set INPUT SELECT behind the sub-control panel to ANALOG.

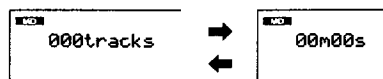


Recording Other Sources

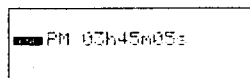
You can record digital or analog sources connected to your unit (see page 19-E) to a recordable MD (see *What Is a MiniDisc?* on page 44-E).



- 1 Press POWER.
- 2 With the label side up and the arrow pointing toward the opening, slide the MD into the disc compartment until the unit grips it.
The disc name (if labeled) appears on the first line while the total number of recorded tracks and the recording time alternately appear on the second line.



- 3 Press FUNCTION to select "LINE."

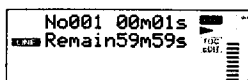


- 4 Set INPUT SELECT to match the respective sound source type.

For sound sources with	Set INPUT SELECT to
An OPTICAL DIGITAL OUT jack	DIGITAL
A LINE OUT jack	ANALOG

Note
When using OPTICAL DIGITAL IN to record a source, sound monitoring is not possible in the recording stop mode.

- 5 While pressing ● (record), press ► (play).
● (record) goes on and recording starts with the recording level automatically adjusted.

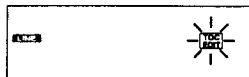


- 6 Play the sound source to be recorded.

- 7 Press ■ (stop) when you want to stop recording.

"TOC" EDIT* begins to blink. After ● (record) goes off, ● (record) goes on again. After about a second, "TOC EDIT" and ● (record) go off and the recording is completed. Wait until "TOC EDIT" goes off to perform another operation.
The next recording to be performed begins on a new track on the MD.

Caution
Do not jog the unit or pull out the mains lead while "TOC EDIT" is flashing.



To	Press
Pause	II
Cancel pause	II
Eject the MD	▲

* The TOC (Table of Contents) contains the beginning and ending addresses of all tracks on the MD.

Recording a CD or premastered MD through OPTICAL DIGITAL IN

To record track numbers in the same sequence as the original, CDs or premastered MDs should only be played in normal play mode — not shuffle or programme play mode.

Note on recording character information

When using OPTICAL DIGITAL IN to record a source, track numbers are automatically recorded in the same sequence as the original; however, no character information (disc or track names) are recorded.

Tips on Recording

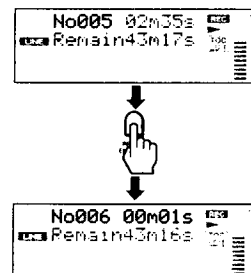
Starting a recording precisely

- 1 Within 4 seconds after pressing II (pause), press ► (play) while holding down ● (record). The unit enters recording pause mode.
- 2 Play the sound source to be recorded.
- 3 When you come to the part you want to record, press II (pause) again.

Track marking during recording

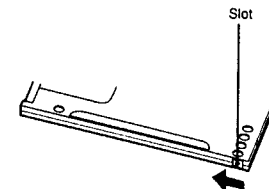
Track marking is essentially the adding of tracks during recording. By adding a track mark (new track number) at desired points, you can quickly locate those points afterwards using the AMS function. This is especially useful for separating material recorded from the radio through the analog input jack (LINE IN), or for adding additional tracks to those recorded from CDs or other MDs through the digital input jack (OPTICAL DIGITAL IN).

While recording, press REPEAT/ENT/MEMO.
The track number increments by one, and material recorded from that point is placed on that track.



To protect a MiniDisc against accidental erasure

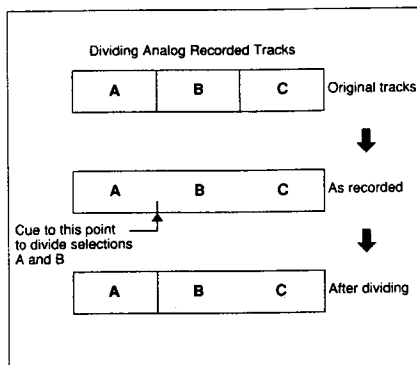
Open the slot to disable recording.
Close the slot to enable recording.



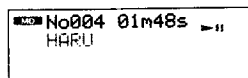
To disable recording, slide the tab in direction of arrow.

Dividing Recorded Tracks

The MD unit records analog sources through the analog input (LINE IN) as a single track on the MD. To randomly access individual songs or portions on this track, separate tracks must be designated for each song or portion, as shown in the illustration below.

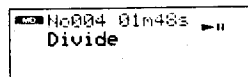


- 1 While the MD is playing, press **II** (pause) at the division point.

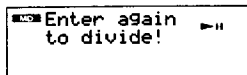


- 2 Press **EDIT** until "Divide" goes on.

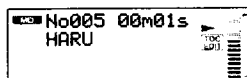
The display changes in the following order: Combine, Divide, Erase, Disc name, Track name, then back to Combine.



- 3 Press **REPEAT/ENT/MEMO**.



- 4 Press **REPEAT/ENT/MEMO** again to confirm your choice. Pause is released and the new track starts playing. The track number in the display increments by one and the playing time of the new track appears. The track title of the original track is assigned to the new track.



- 5 Repeat steps 1 to 4 until you have made all the desired divisions.

- 6 Press **■** (stop).

"TOC EDIT" flashes while the new TOC data is written to the MD. After about a second, "TOC EDIT" goes off and track division is completed.

Caution

Do not jog the unit or pull out the mains lead while "TOC EDIT" is flashing.



To cancel the track division procedure
Press **■** (stop) prior to step 4.

If you make a mistake

Combine the tracks again (see *Combining Recorded Tracks* on page 24-E), then redivide the tracks.

Changing the order of consecutive tracks

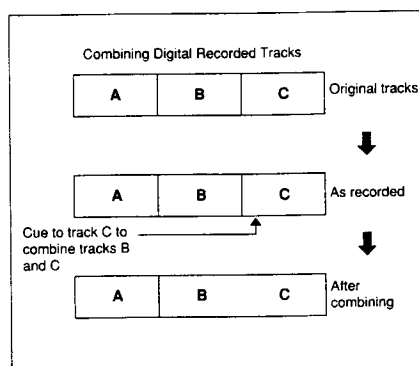
Use the procedure below to switch the order of two consecutive tracks.

- 1 Play the second track of the two you want to switch. For example, to switch tracks 1 and 2, play track 2.
- 2 While the MD is playing, hold down **▶** (play) and press **EDIT** until "Swap" goes on.
- 3 Press **REPEAT/ENT/MEMO**. "Enter again to swap" goes on and play is paused.
- 4 Press **REPEAT/ENT/MEMO** again to confirm the switch. The order of the two tracks switches and play resumes.
- 5 Press **■** (stop). "TOC EDIT" flashes while the TOC is updated. After about a second, "TOC EDIT" goes off and the switch is completed.

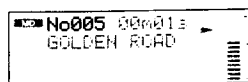
To cancel the swapping procedure
Press **■** (stop) prior to step 4.

Combining Recorded Tracks

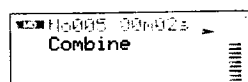
Digital sources input through the OPTICAL DIGITAL IN jack (such as CDs and other MDs) are recorded to the MD with all the track divisions of the original. The combine function allows you to combine consecutive tracks on a recorded MD (see illustration below) to eliminate undesired track divisions or correct mistakes made during track division (see page 22-E).



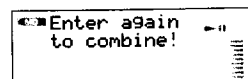
- 1 Play the second track of the two you want to combine.



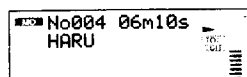
- 2 Press EDIT until "Combine" appears. The display changes in the following order: Combine, Divide, Erase, Disc name, Track name, then back to Combine.



- 3 Press REPEAT/ENT/MEMO. "Enter again to combine!" goes on and play is paused.



- 4 Press REPEAT/ENT/MEMO again to confirm the combination. The two tracks are combined and play resumes. The display shows the first of the two track numbers and the combined time of both tracks.



- 5 Press ■ (stop). "TOC EDIT" flashes while the TOC is updated. After about a second, "TOC EDIT" goes off and the track combination is completed.

Caution

Do not jog the unit or pull out the mains lead while "TOC EDIT" is flashing.



To cancel the track combination procedure
Press ■ (stop) prior to step 4.

If you make a mistake

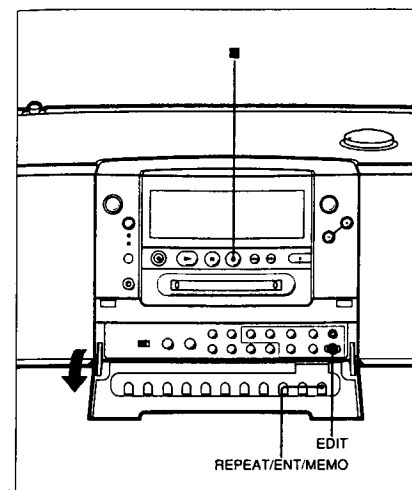
Divide the tracks again (see *Dividing Recorded Tracks* on page 22-E), then recombine the tracks.

Note

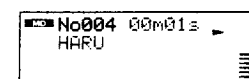
After two tracks have been combined, the recording date and the track title of the first track become the effective recording date and track title of the combined track.

Erasing Recordings

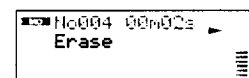
If your recorded MD has been divided into tracks, you can use the procedure below to erase specific tracks easily and instantly. Note, however, that once erased, a track cannot be recovered.



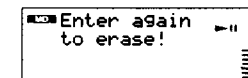
- 1 Play the track you want to erase.



- 2 Press EDIT until "Erase" goes on. The display changes in the following order: Combine, Divide, Erase, Disc name, Track name, then back to Combine.



- 3 Press REPEAT/ENT/MEMO. "Enter again to erase!" goes on and play pauses.



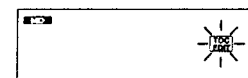
- 4 Press REPEAT/ENT/MEMO again to confirm the erasure. The designated track is erased, and the remaining tracks are renumbered. The track following the one just erased starts playing. If the erased track is the last one on the MD, the unit enters pause mode at the end of the previous track.



- 5 Press ■ (stop). "TOC EDIT" flashes while the TOC is updated. After about a second, "TOC EDIT" goes off and the erasure is completed.

Caution

Do not jog the unit or pull out the mains lead while "TOC EDIT" is flashing.



To cancel the erasure procedure
Press ■ (stop) prior to step 4.

Erasing Recordings (continued)

Erasing a part of a track

- 1 Follow the procedure on page 22-E (*Dividing Recorded Tracks*) to create a track division at the starting and ending points of the portion to be erased.
- 2 Follow the procedure on page 25-E (*Erasing Recordings*) to erase the selected portion.
- 3 Follow the procedure on page 24-E (*Combining Recorded Tracks*) to join the portions before and after the erased portion.

Erasing a disc

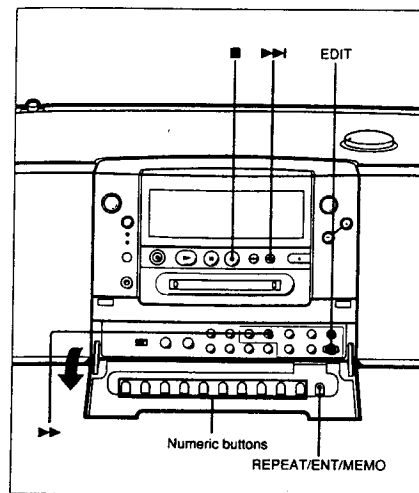
Erasing a recordable MD deletes all recorded tracks and disc names.

- 1 While the MD is playing, hold down ► (play) and press EDIT until "Swap" goes on.
- 2 Press EDIT again.
"Be careful! Erase all" goes on.
- 3 Press REPEAT/ENT/MEMO.
"Enter again to erase all" goes on and play is paused.
- 4 Press REPEAT/ENT/MEMO.
"TOC EDIT" flashes while the TOC is updated. After about a second, "TOC EDIT" goes off and the erasure is completed.

To cancel the erasing procedure
Press ■ (stop) prior to step 4.

Labeling Recordings (Title Function)

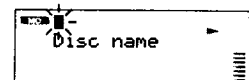
Use the title function to create titles for your recorded discs and tracks. Titles — which may consist of uppercase letters, numbers and spaces — appear in the display window during MD operation.



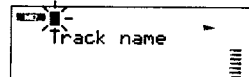
- 1 Press ► (play).
To label an MD, play any track on the MD.
To label a track, play the track to be labeled.
- 2 Press EDIT to select either "Disc name" or "Track name."

The display changes in the following order: Combine, Divide, Erase, Disc name, Track name, then back to Combine.

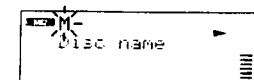
To label an MD
Press EDIT until "Disc name" goes on. Repeat play of all tracks begins automatically.



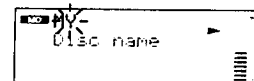
To label a track
Press EDIT until "Track name" goes on. Repeat play of a single track begins automatically.



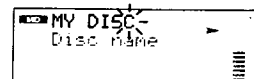
- 3 Press the numeric buttons to enter the desired characters. Since each button is used to input up to 4 characters, press the button once to enter a number, and twice, three or four times to enter a letter. For example, press numeric button 5 twice to enter "M".



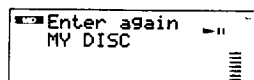
- 4 Press ►► (AMS) or ►► (SEARCH) to move to the next letter.
If you make a mistake, press ◀◀ (AMS) or ◀◀ (SEARCH), then enter the correct letter. To erase a letter, enter a space () by pressing 0 twice.



- 5 Repeat steps 3 and 4 until you have entered the entire title using a maximum of 21 characters.



- 6 Press REPEAT/ENT/MEMO.
Play pause and the title you entered appears on the second line.

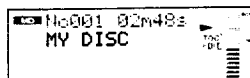


(Continued on next page.)

Labeling Recordings (Title Function) (continued)

(Continued from previous page.)

- 7 Press REPEAT/ENT/MEMO again to confirm the title. Pause is cancelled, the title you entered is displayed for about 10 seconds, and the display returns to normal. If you enter more than 12 characters, the display scrolls once, then displays the first 12 characters again.



- 8 Press ■ (stop). "TOC EDIT" flashes while the TOC is updated. After about a second, "TOC EDIT" turns off and the labeling procedure is completed.

Caution

Do not jog the unit or pull out the mains lead while "TOC EDIT" is flashing.



To cancel the labeling procedure

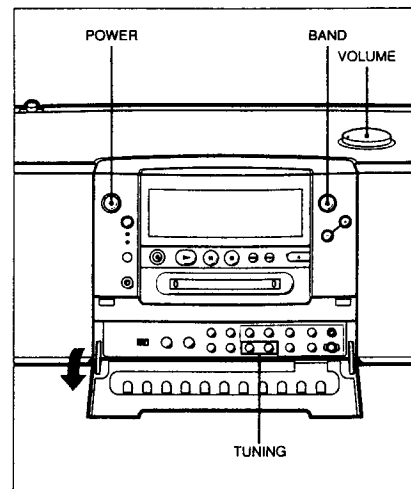
Press ■ (stop) prior to step 7.

Making a correction after entering a title

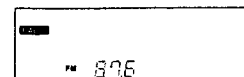
If you pressed REPEAT/ENT/MEMO in step 7 but wish to make a correction, repeat the labeling procedure from step 2.

Listening to the Radio

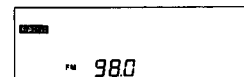
Follow the procedure below to tune in FM or AM broadcasts.



- 1 Press POWER. You can also turn the player on by pressing BAND.
- 2 Press BAND to select FM or AM. "RADIO" turns on and the band changes each time you press the button.



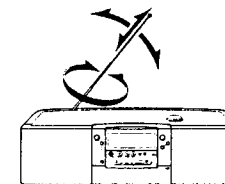
- 3 Tune in a radio station. Press either the TUNING - or + button until the frequency display begins changing. The Auto Scan function searches for, then locks onto the next strong signal. Continue pressing the button until you find the desired station.



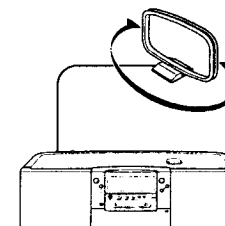
To	Press
Turn off the radio	POWER
Listen to FM	MODE to display "STEREO".
Reduce FM noise	MODE to display "MONO". The noise will be reduced, but the radio will play in monaural.

To improve broadcast reception
Reorient the aerial.

FM



AM

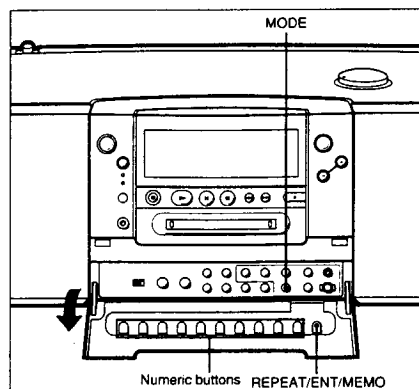


Note

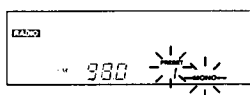
To minimize noise interference from the player section, locate the AM loop aerial away from the player during AM programme reception.

Presetting Radio Stations

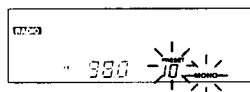
Presetting your favorite radio stations allows you to quickly tune them in merely by pressing PRESET on the unit or the numeric buttons on the remote commander. The reception mode (stereo or monaural) can also be stored for each preset station.



- 1 Press BAND to select AM or FM, then press the TUNING buttons to tune in the desired station.
- 2 Press REPEAT/ENT/MEMO for about 2 seconds. "PRESET" and a preset number start flashing. The radio station will be stored under the displayed number.



- 3 Press the numeric buttons to enter another preset number, if desired. For example, to set 10, press numeric button 1, then 0. You may also press PRESET to increment the preset number display. Up to 24 stations, 12 each for AM and FM, can be stored.

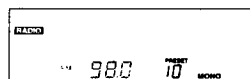


If you enter the wrong number, press the numeric buttons again to enter the correct number.

- 4 Press MODE to select the reception mode to be stored.

Reception mode	Indication
Stereo	STEREO
Monaural	MONO

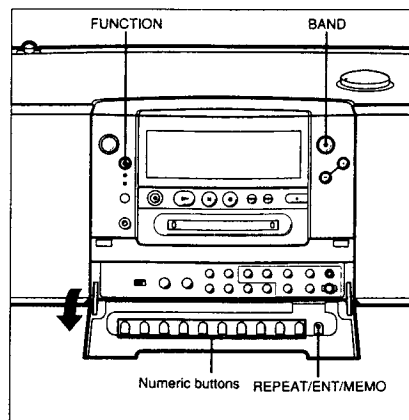
- 5 Press REPEAT/ENT/MEMO. "PRESET" and the preset number stop flashing and remain on.



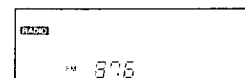
Note
Radio stations cannot be preset during the recording of radio programmes.

Playing Preset Radio Stations

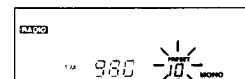
Press PRESET on the unit or the numeric buttons on the remote commander to call up stations by their preset number.



- 1 Press BAND or FUNCTION to turn on the RADIO indicator.



- 2 Enter the desired preset number by pressing the numeric buttons. For example, to select 10, press numeric button 1, then 0. You may also press PRESET to increment the preset number display.



If you enter the wrong number, press the numeric buttons again to enter the correct number.

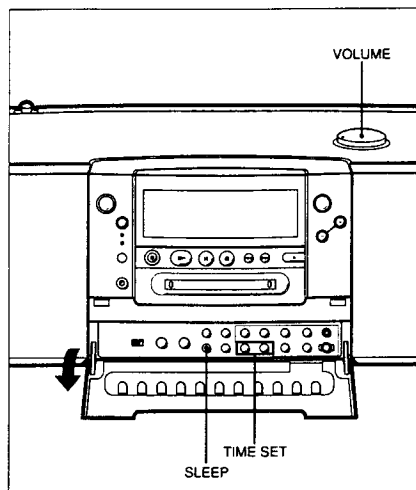
- 3 Press REPEAT/ENT/MEMO. The selected preset radio station begins playing in the specified reception mode.

To erase a preset station

Storing a new station to a previously used preset number will erase the old station and replace it with the new one.

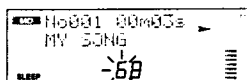
Falling Asleep to Music

The timer can be set to turn off the system after a lapse of 10, 30, 60, 90 or 120 minutes, allowing you to fall asleep while listening to a desired sound source.



1 Select the desired sound source by pressing FUNCTION then start playing the selected sound source.

2 Press SLEEP.



3 Within 4 seconds after pressing SLEEP, select the desired time duration by pressing TIME SET (+ or -). Each press of the TIME SET (+) button changes the time duration as follows:

10-30-60-90-120

After 4 seconds, the time duration is replaced by the previous display and the sleep function activates. At this time, the back-lighting stays off even with the power on.



To cancel the sleep function

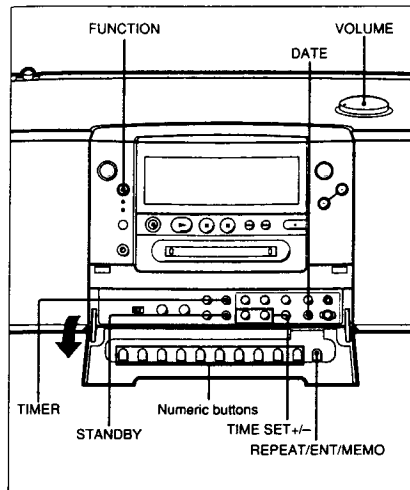
Press SLEEP to turn off the SLEEP indicator, or turn off the power.

To fall asleep with one programme and wake up with another

Set the programme to be activated when the timer goes on using the procedure on page 35-E (*Waking Up to Music*), then perform the procedure for the sleep function.

Waking Up to Music

The wake up function turns the system on automatically at a specified time to wake you up with a preselected programme.



Before you start...

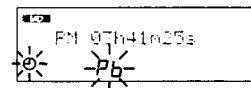
- Verify that the clock is set correctly. (If not, reset it using the procedure *Setting the Clock* on page 11-E.)
- Verify that the \odot indication is off. (If not, press STANDBY to turn it off.)

1 Select the desired sound source.

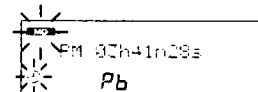
Sound source	Preparation
MD	Insert a disc.
Radio	Tune in the desired station.
Other components connected through the LINE IN jack	Turn on the power of the selected component.*

* For details, see the operation manual of the respective component.

2 Press TIMER until "Pb" and \odot (or "REC" and \odot) goes on.
If "REC" goes on, press TIME SET (+ or -) to change it to "Pb".



3 Press REPEAT/ENT/MEMO.



4 Select the desired sound source by pressing FUNCTION or TIME SET (+ or -).

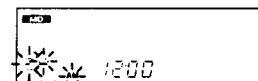
Sound source	Indication
MD	MD
Radio	RADIO
Other components connected through the LINE IN jack	LINE

5 Press REPEAT/ENT/MEMO.
"ON" goes on.

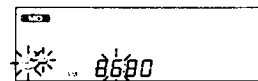


6 Set the timer-on time.

1 Press DATE to select AM or PM, then press REPEAT/ENT/MEMO.



2 Enter the hour with the numeric buttons, then press REPEAT/ENT/MEMO to store it.

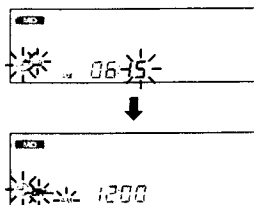


(Continued on next page.)

Waking Up to Music (continued)

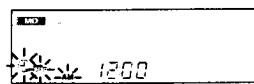
(Continued from previous page.)

- 3 Enter the minutes with the numeric buttons, then press REPEAT/ENT/MEMO to store the timer-on time. "OFF" goes on next.

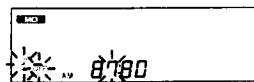


- 7 Set the timer-off time.

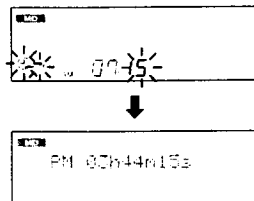
- 1 Press DATE to select AM or PM, then press REPEAT/ENT/MEMO.



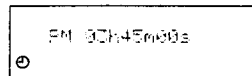
- 2 Enter the hour with the numeric buttons, then press REPEAT/ENT/MEMO to store it.



- 3 Enter the minutes with the numeric buttons, then press REPEAT/ENT/MEMO to store the timer-off time. The timer-off time is replaced by the previous display.



- 8 Press STANDBY. The power turns off automatically, and the indicator goes on. At the timer-on time, the power turns on and the selected source plays automatically. (The back-lighting stays off.)



If you make a mistake

Press TIMER, then repeat the procedure again.

To confirm the timer and function settings

Press TIMER, then REPEAT/ENT/MEMO. The selected function and "Pb" go on. Press REPEAT/ENT/MEMO again for the timer-on time, and again for the timer-off time. When finished, press TIMER to return to the previous display.

To turn off the unit during timer-activated operation

Turn off the power by pressing POWER.

To turn off the timer

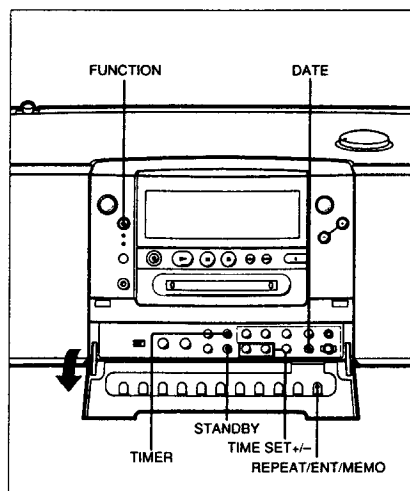
Press STANDBY to turn off the indicator.

To continue using the same settings on succeeding days

You need not set the timer and function again since the timer settings and function are stored until you reset them. If the indicator is not on, press STANDBY to turn it on.

Timer-Recording Radio Programmes

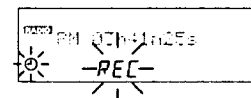
By setting the timer, your unit will automatically record a desired radio programme while you are away or asleep.



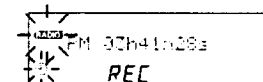
Before you start...

- Verify that the time setting is correct. (If not, set the correct time using the procedure *Setting the Clock* on page 10-E.)
- Verify that the indicator is off. (If not, press STANDBY to turn it off.)

- 1 Tune in the desired station to be recorded.
- 2 Insert a recordable disc. If the disc is record-protected, close the slot (see page 21-E).
- 3 Press TIMER until "Pb" and the indicator (or "REC" and the indicator) go on. If "Pb" goes on, press the TIME SET (+ or -) button to change it to "REC".

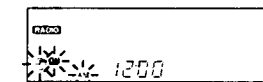


- 4 Press REPEAT/ENT/MEMO.



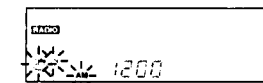
- 5 Press FUNCTION or TIME SET (+ or -) to turn on the RADIO indicator.

- 6 Press REPEAT/ENT/MEMO. "ON" goes on.

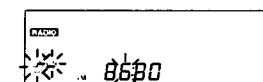


- 7 Set the timer-on time.

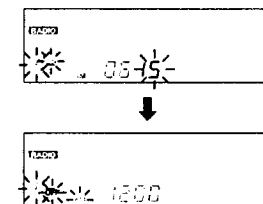
- 1 Press DATE to select AM or PM, then press REPEAT/ENT/MEMO.



- 2 Enter the hour with the numeric buttons, then press REPEAT/ENT/MEMO to store it.



- 3 Enter the minutes with the numeric buttons, then press REPEAT/ENT/MEMO to store the timer-on time. "OFF" goes on next.



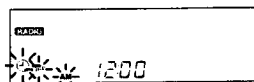
(Continued on next page.)

Timer-Recording Radio Programmes (continued)

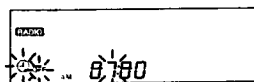
(Continued from previous page.)

8 Set the timer-off time.

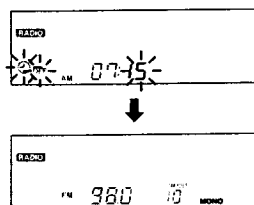
- 1 Press DATE to select AM or PM, then press REPEAT/ENT/MEMO.



- 2 Enter the hour with the numeric buttons, then press REPEAT/ENT/MEMO to store it.

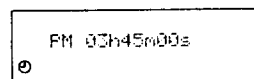


- 3 Enter the minutes with the numeric buttons, then press REPEAT/ENT/MEMO to store the timer-off time. The timer-off time is replaced by the previous display.



9 Press STANDBY.

The power turns off automatically, and \odot goes on. At the timer-on time, the power turns on and the selected radio station plays automatically. (The back-lighting stays off.)



If you make a mistake

Press TIMER, then repeat the procedure again.

To confirm the timer and function settings

Press TIMER, then REPEAT/ENT/MEMO. The selected function and "REC" go on. Press REPEAT/ENT/MEMO again for the timer-on time, and again for the timer-off time. When finished, press TIMER to return to the previous display.

To turn off the unit during timer-activated operation

Turn off the power by pressing POWER.

To turn on the timer

Press STANDBY to turn off the \odot indicator.

To continue using the same settings on succeeding days

You need not set the timer and function again since the timer settings and function are stored until you reset them. If the \odot indicator is off, press STANDBY to turn it on.

Note on recording AM programmes

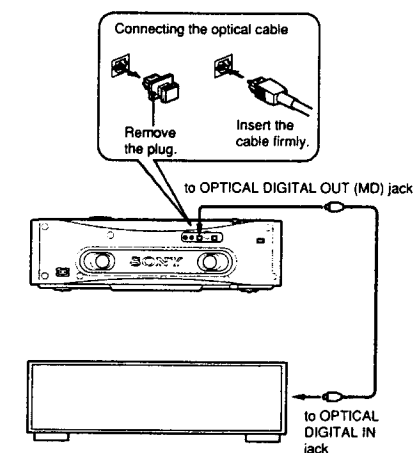
Before activating the timer for recording, adjust the AM loop aerial for optimum signal reception.

Connecting Optional Equipment

Connecting your unit to other components allows you to enjoy MD sound on high-quality output equipment or record MD sound on other equipment.

Hooking up a component with digital input capability

Use a POC-5 optical cable (not supplied) to connect the digital input jack of the other component to the OPTICAL DIGITAL OUT (MD) jack.

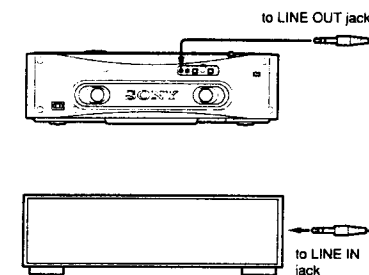


Notes

- You cannot use the digital output jack (OPTICAL DIGITAL OUT) to dub to another digital component with a sampling frequency different from that of the MD unit such as DAT (32 kHz, 48 kHz). In these cases, use the analog output jack (LINE OUT) as described next in the next section, *Hooking up a component with analog input capability*.
- Do not touch the terminals of the optical cable since contamination from the fingers may interfere with the signal output.

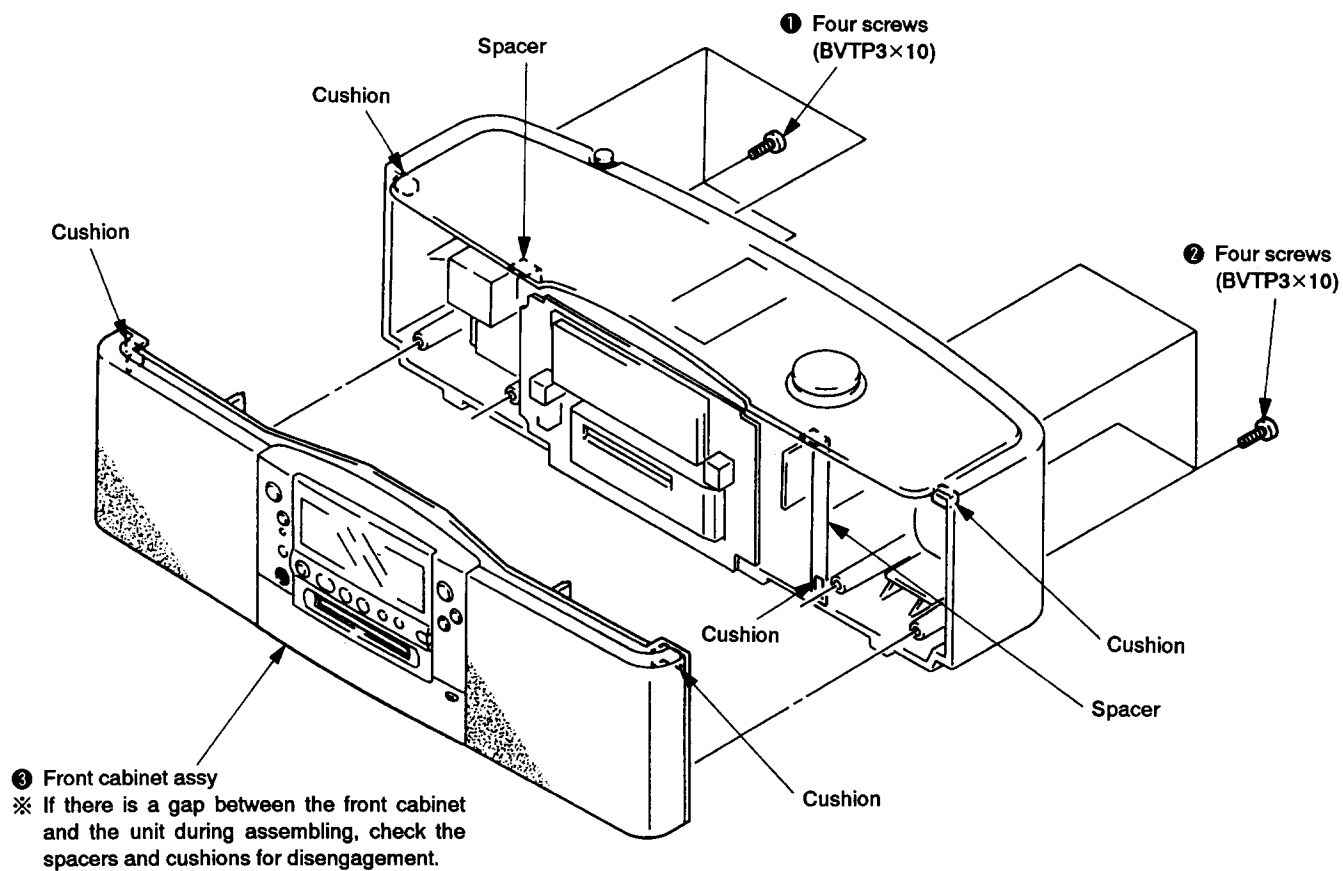
Hooking up a component with analog input capability

Use an RK-G136 (not supplied) to connect the analog input jack of the other component to the LINE OUT jack.

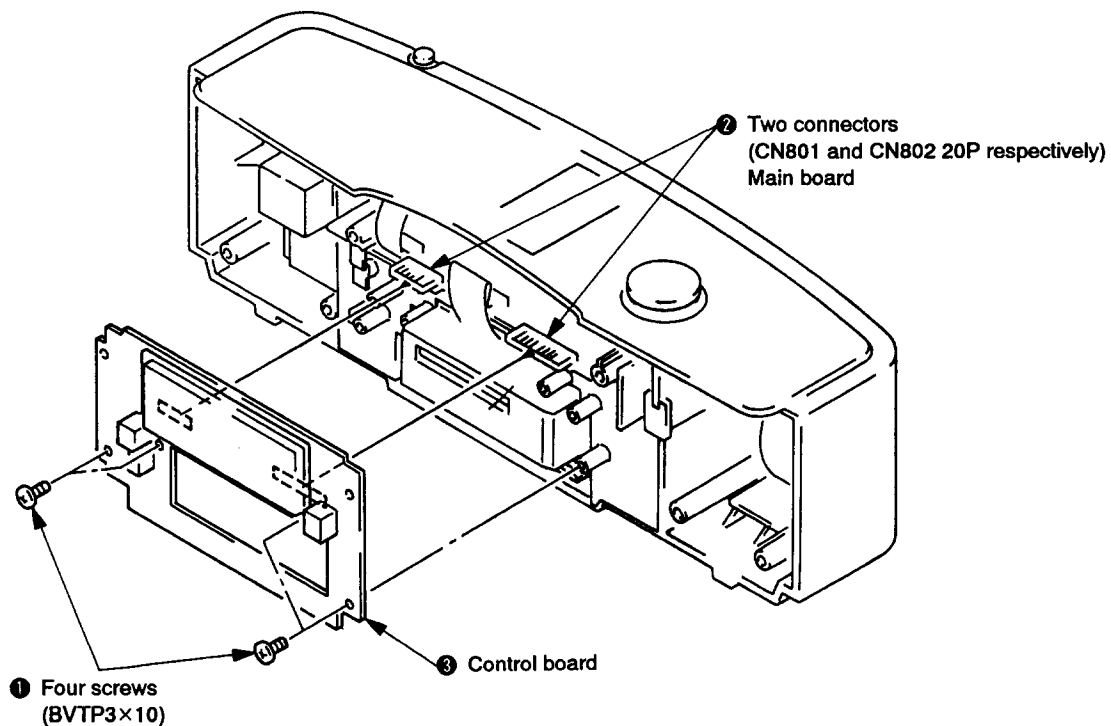


SECTION 2 DISASSEMBLY

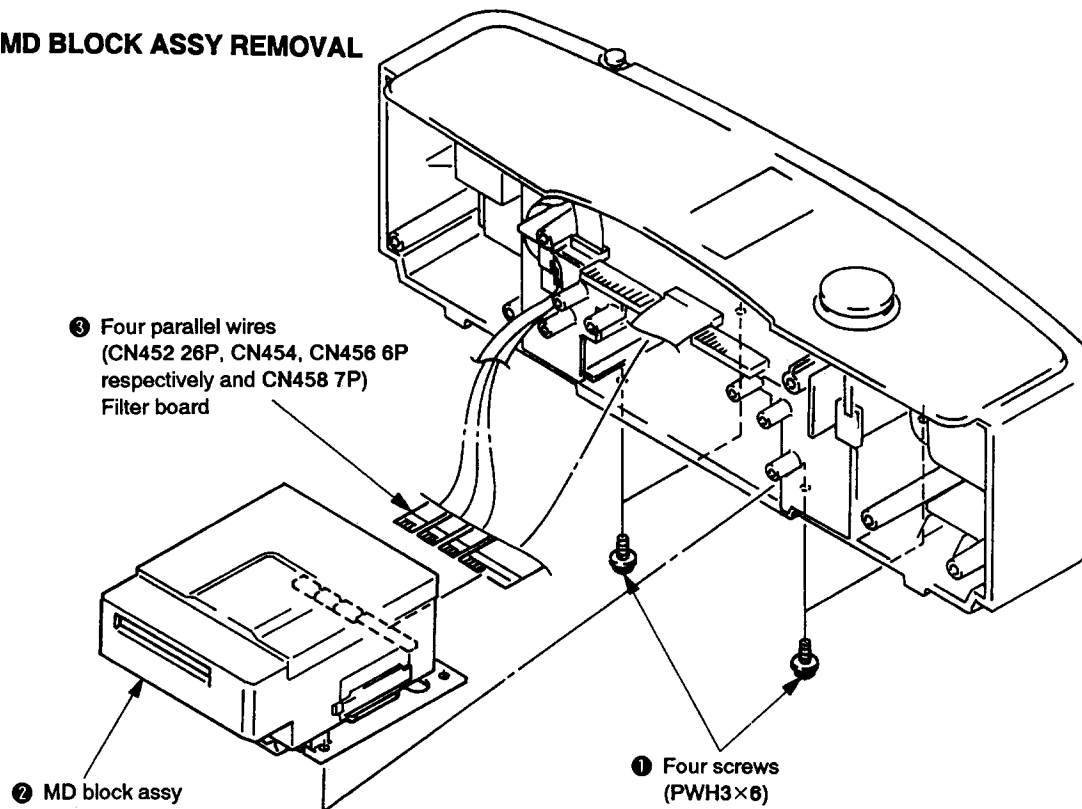
2-1. FRONT CABINET ASSY REMOVAL



2-2. CONTROL BOARD REMOVAL



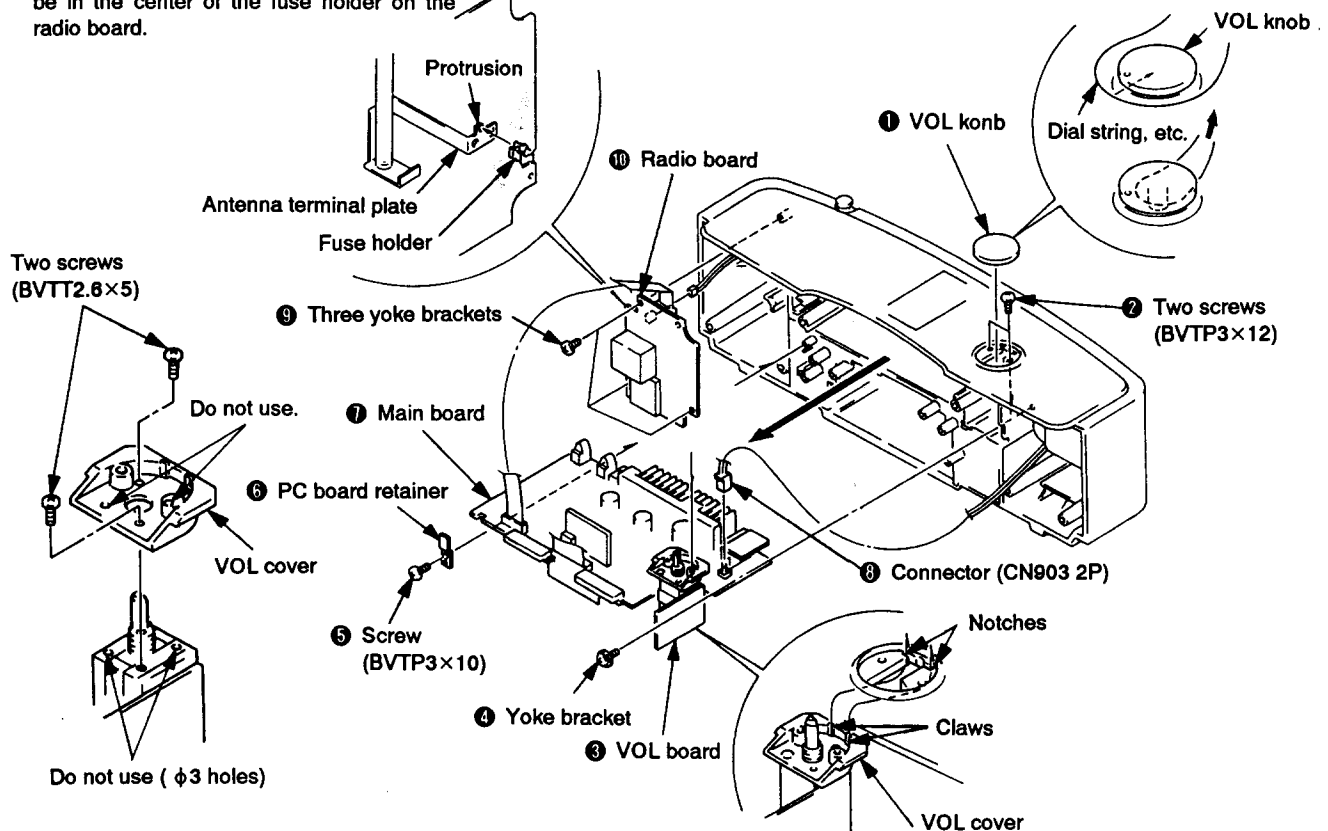
2-3. MD BLOCK ASSY REMOVAL



2-4. MAIN BOARD AND RADIO BOARD REMOVAL

※ When mounting the radio board, a protrusion of antenna terminal board should be in the center of the fuse holder on the radio board.

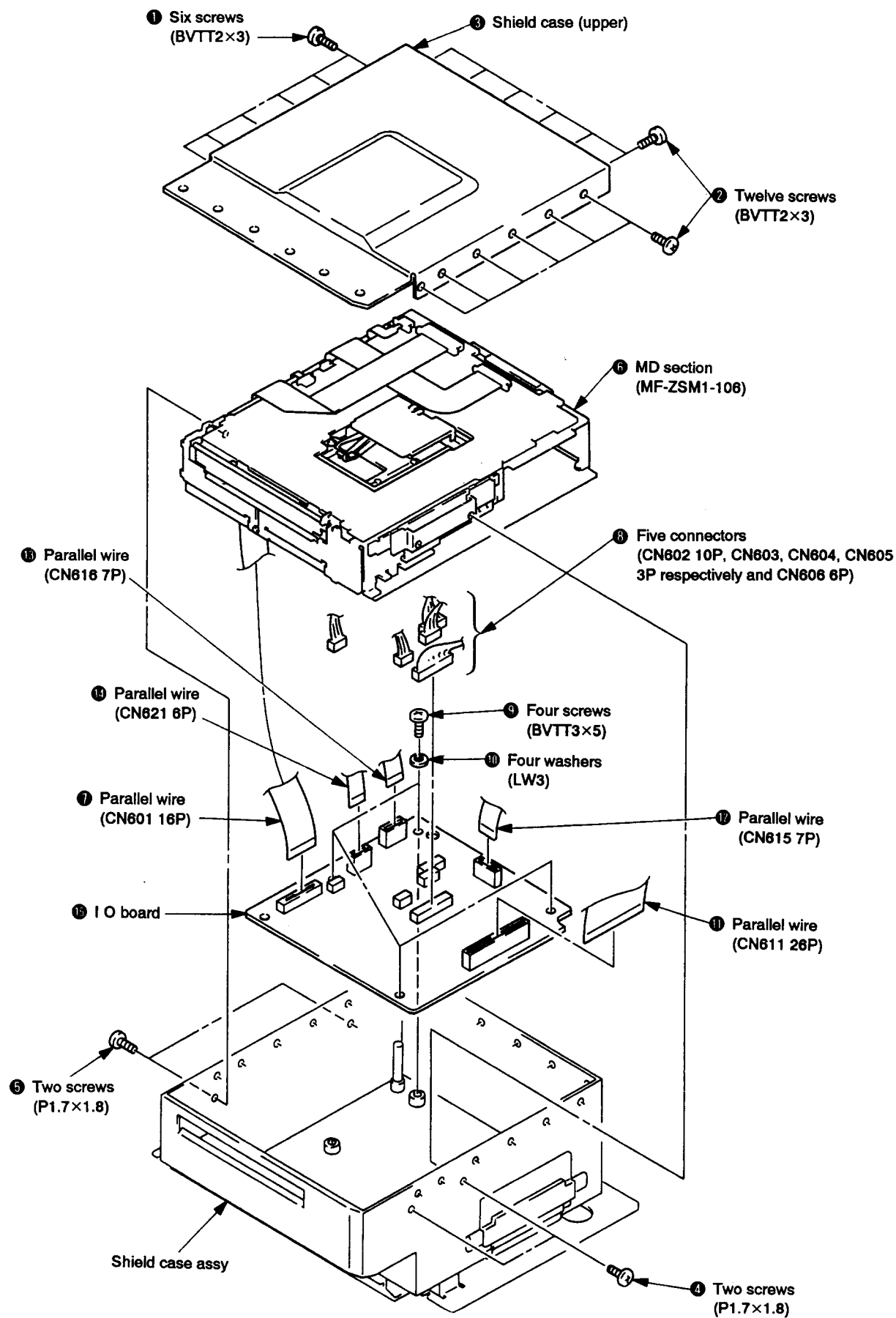
※ For easy removal, hook the knob using a dial string, etc. and pull.



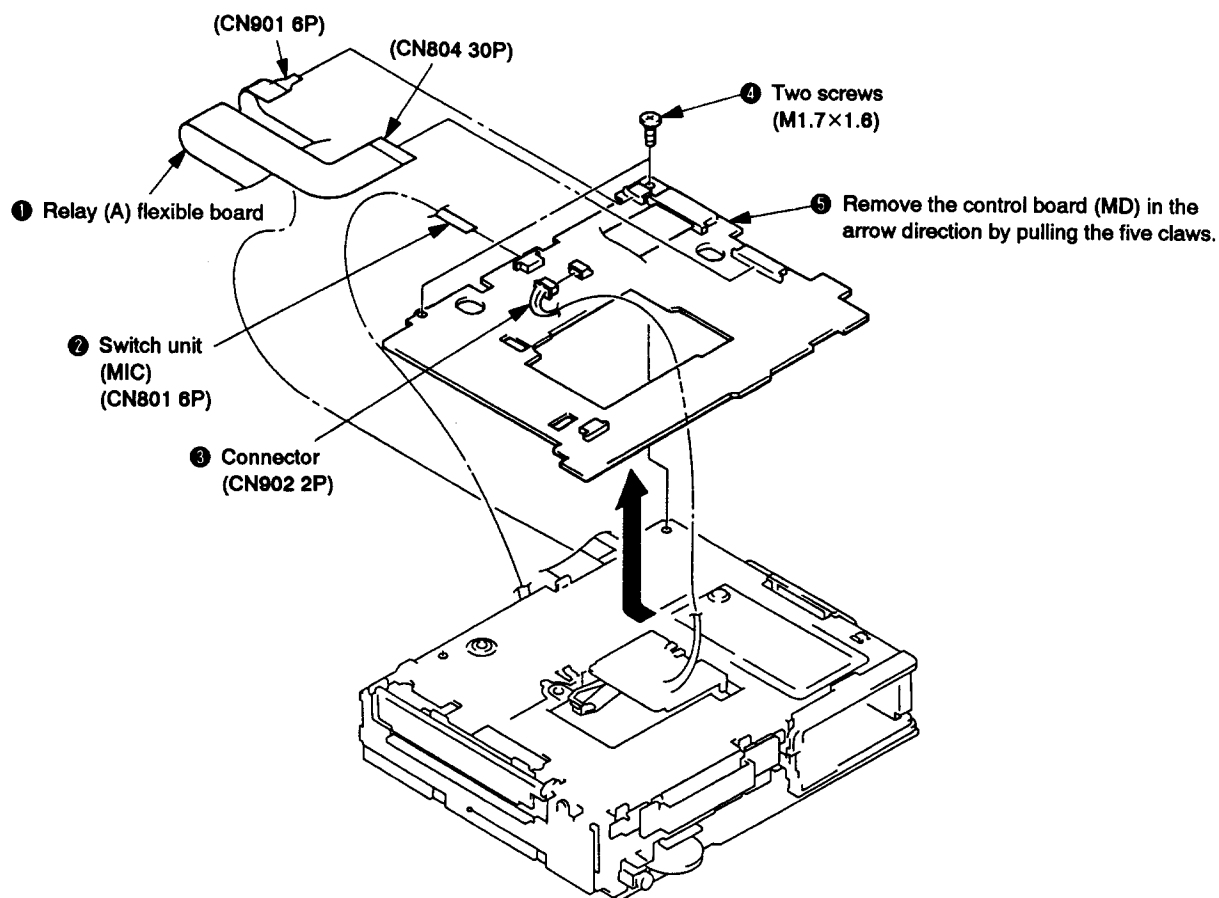
※ Use BVTT2.6×5 screws when mounting the VOL cover. Do not use φ3 holes.

※ When mounting the VOL board, insert completely two claws on VOL cover into notches in the rear cabinet.

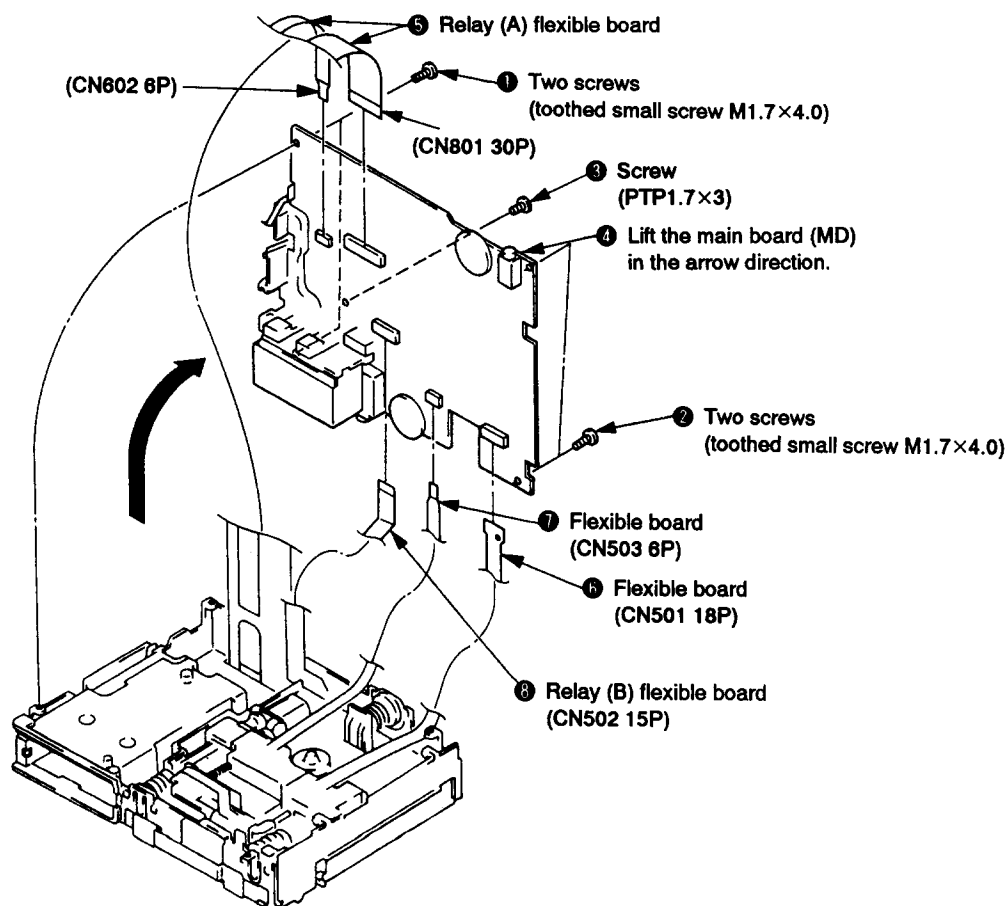
2-5. MD SECTION (MF-ZSM1-106) AND I O BOARD REMOVAL



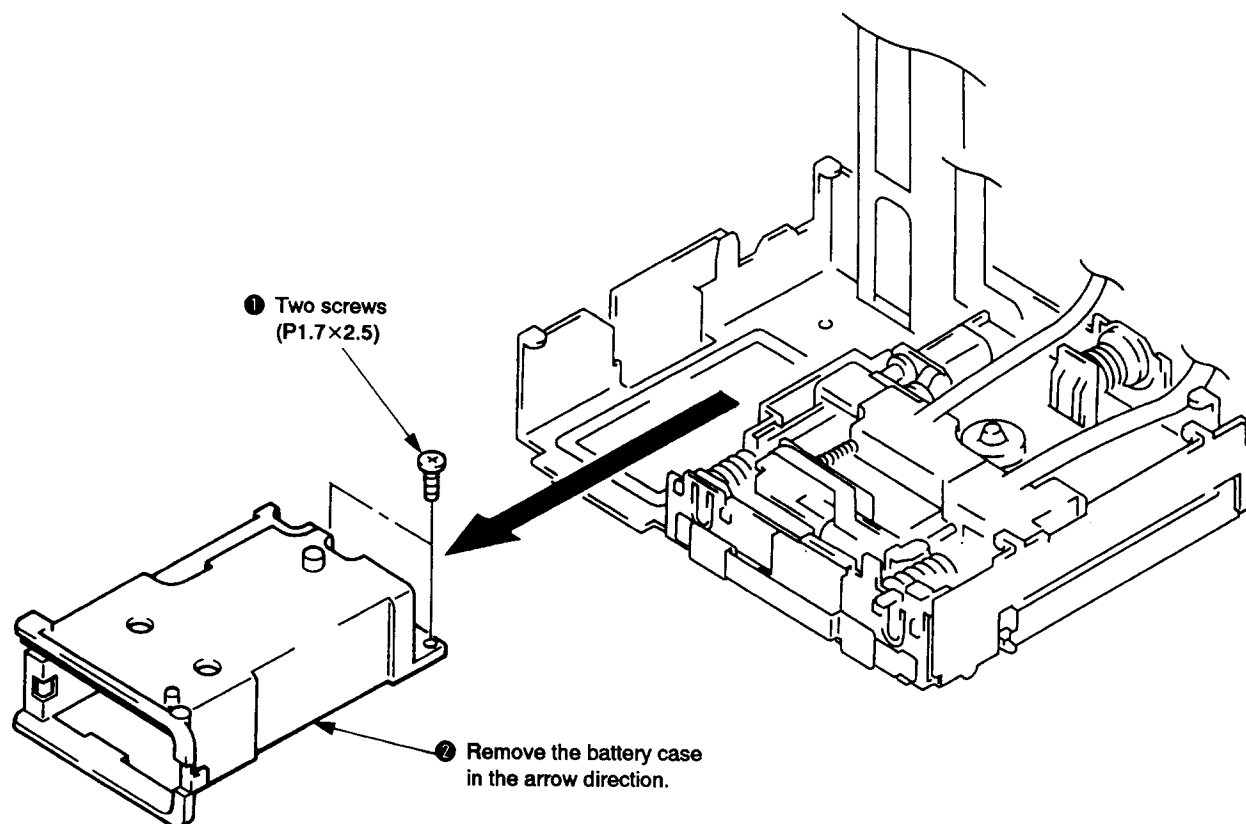
2-6. CONTROL BOARD (MD) REMOVAL



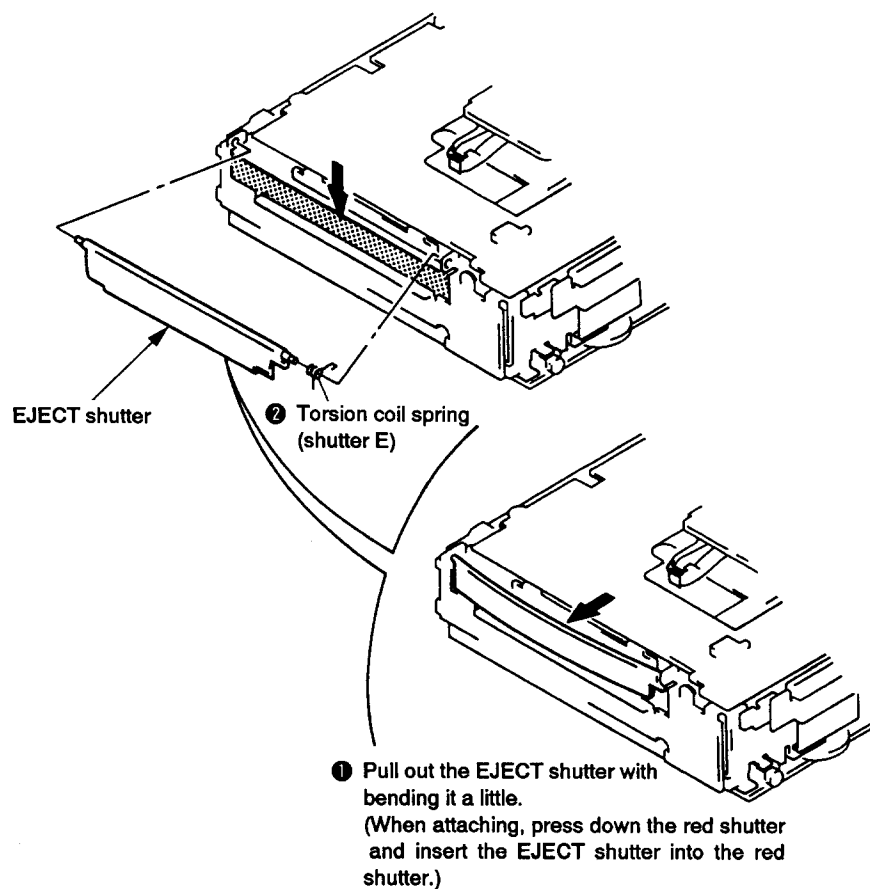
2-7. MAIN BOARD (MD) REMOVAL



2-8. BATTERY CASE REMOVAL

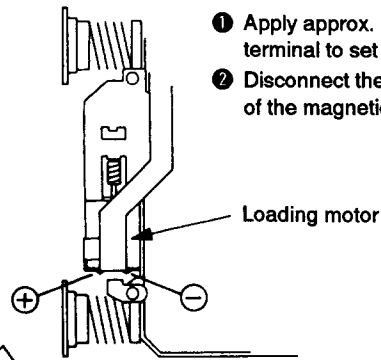


2-9. EJECT SHUTTER REMOVAL



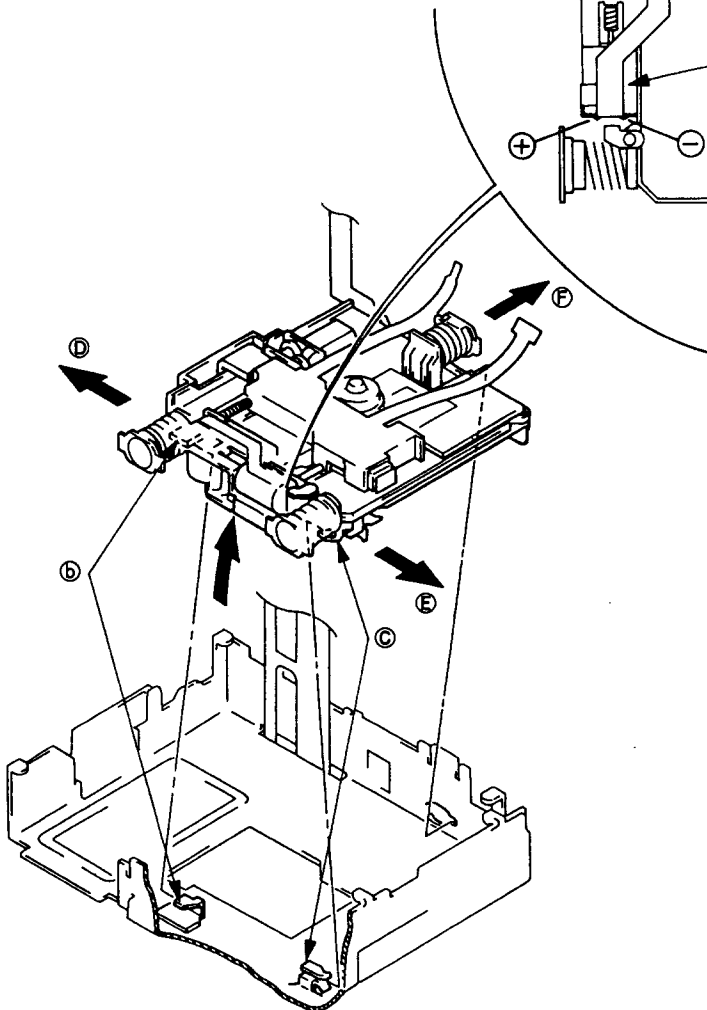
2-10. MECHANICAL DECK ASSY (MT-MZ1-106) REMOVAL

- ① Apply approx. 2V to the loading motor terminal to set it in loading condition.
- ② Disconnect the connector (control board) of the magnetic head.



※ When the loading condition can not occur due to the loading motor or mechanical failure:
(When performing the following procedures, be sure to set the loading condition to avoid mechanical burden.)

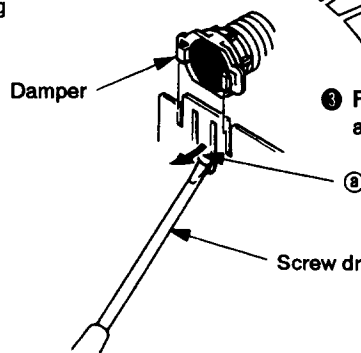
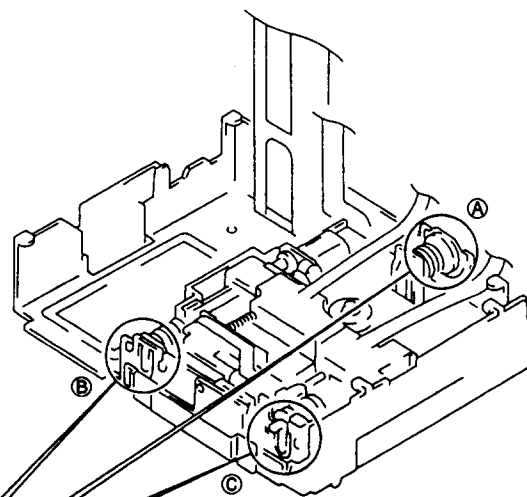
1. Detach the three dampers.
2. Move the mechanical deck in the arrow ① direction and unlock the ② portion.
3. Move the mechanical deck in the arrow ③ direction and unlock the ④ portion.
4. Move the mechanical deck in the arrow ⑤ direction and remove the mechanical deck.



- ④ Remove the mechanical deck from ② and ④ portions first. (When installing, remove the damper at ① portion from the mechanical deck and mount the damper on the chassis, then mount the mechanical deck to ① portion first.)

Note: Do not touch the optical block when removing the mechanical deck.

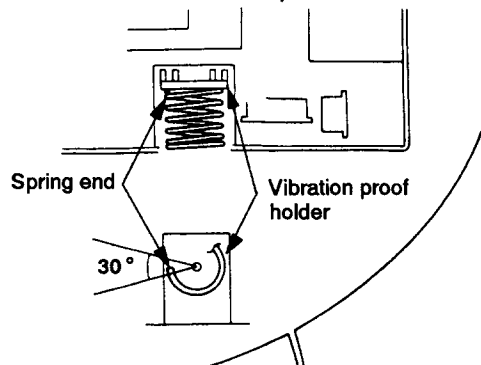
Note: During mounting the mechanical deck, activate the loading motor to make loading condition. (The mechanical deck can not be mounted unless loading condition.)



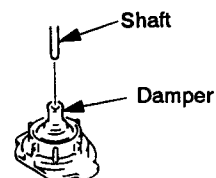
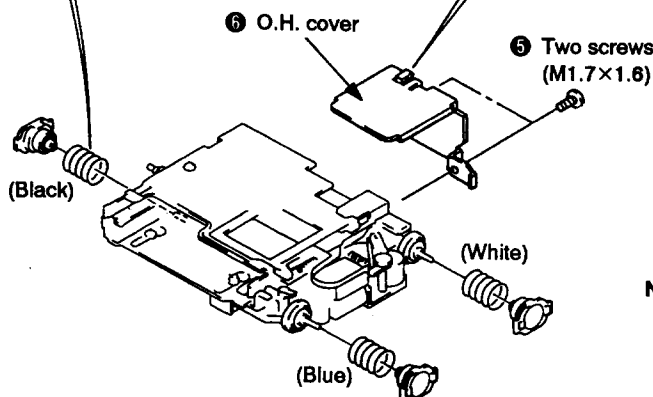
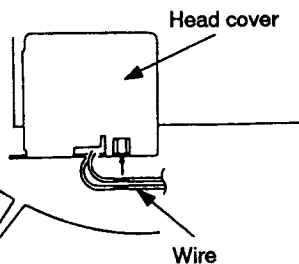
- ① Raise each ② portion of the chassis A, B and C using a screwdriver, etc.

Screw driver, etc.

Note: When mounting the mechanical deck, place the spring end of vibration proof holder side as shown in the figure below. (The balance condition of the mechanical deck makes the vertical held ejector in the best condition.)



Note: When mounting, align the black mark on the magnetic head wire with the head cover slit, and smear the locking compound.



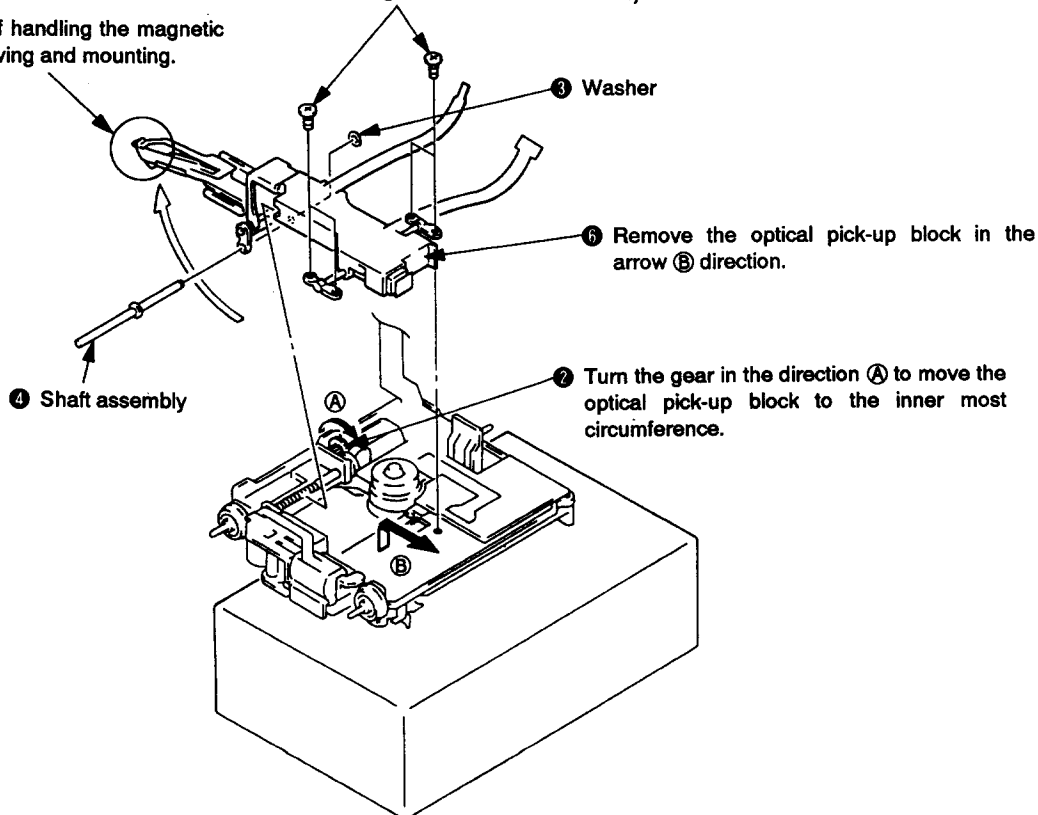
Note: When mounting the damper, make the rubber in a condition as shown in the figure, and insert the shaft.

2-11. OPTICAL PICK-UP BLOCK (KMS-130B) REMOVAL

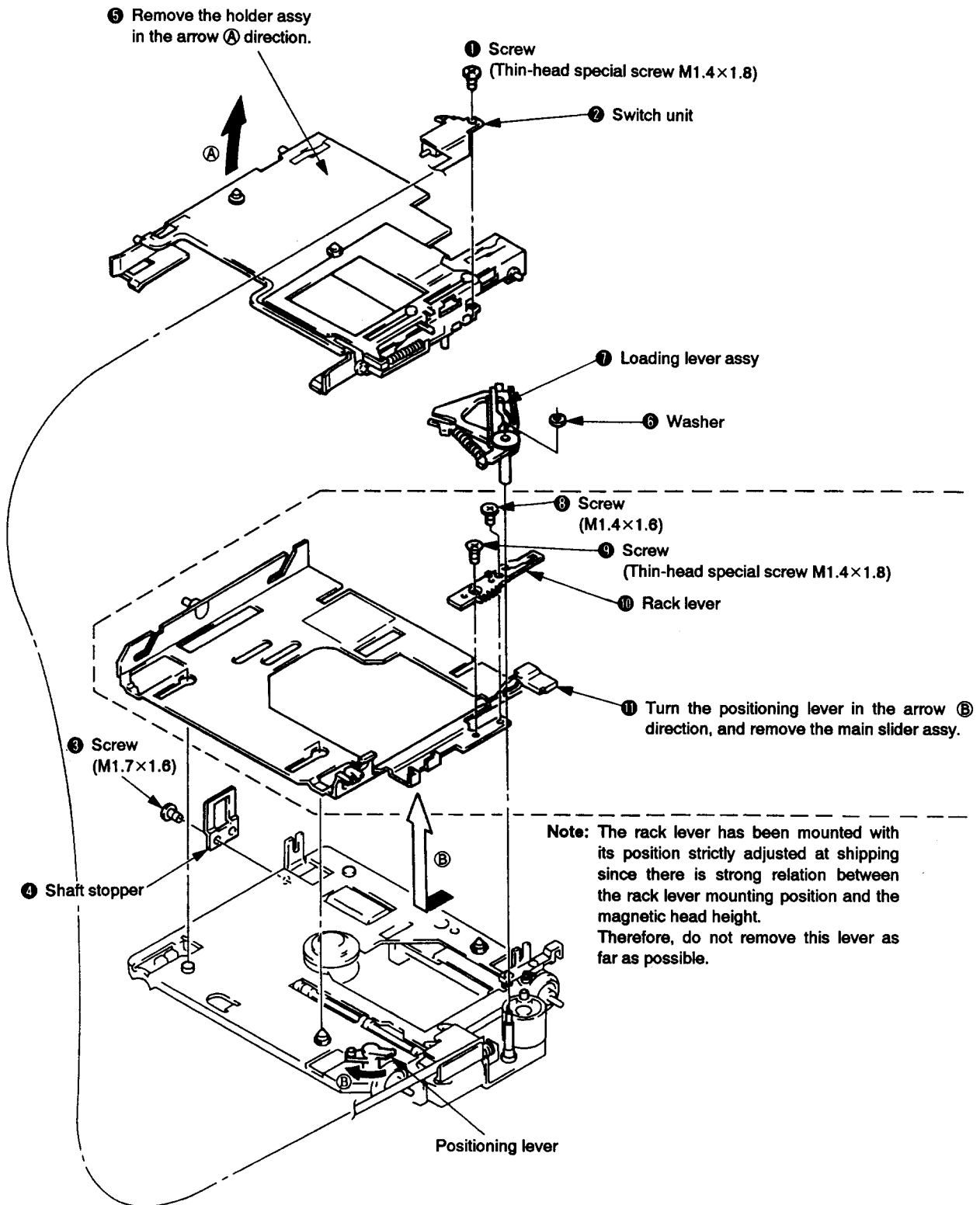
- ① Turn the loading motor to set in eject condition.

Note: Fully take care of handling the magnetic head when removing and mounting.

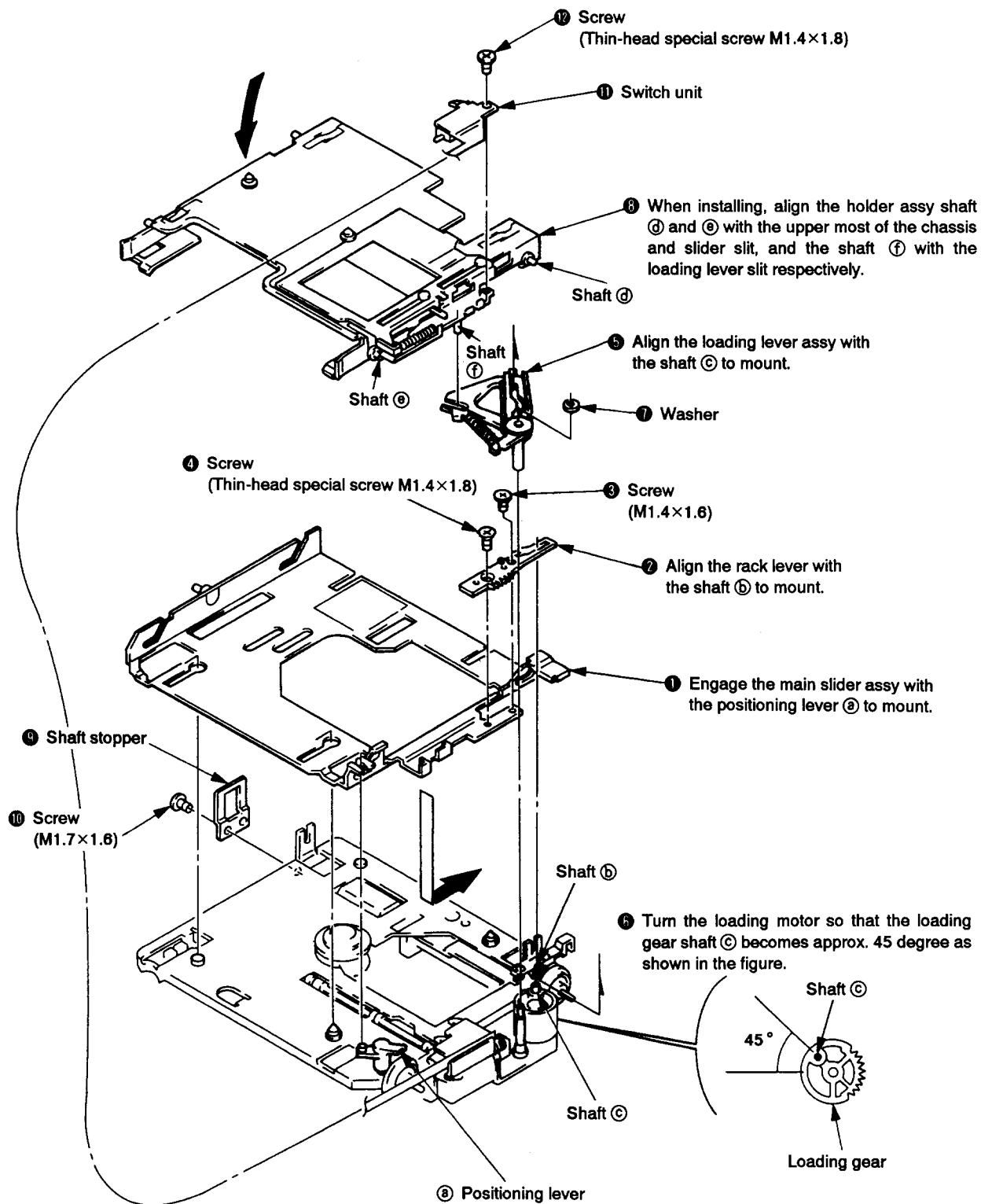
- ⑤ Four screws (M1.7x2.5)
(When tightening the screws, place the mechanical deck on a stand, etc. to avoid the magnetic head of destruction.)



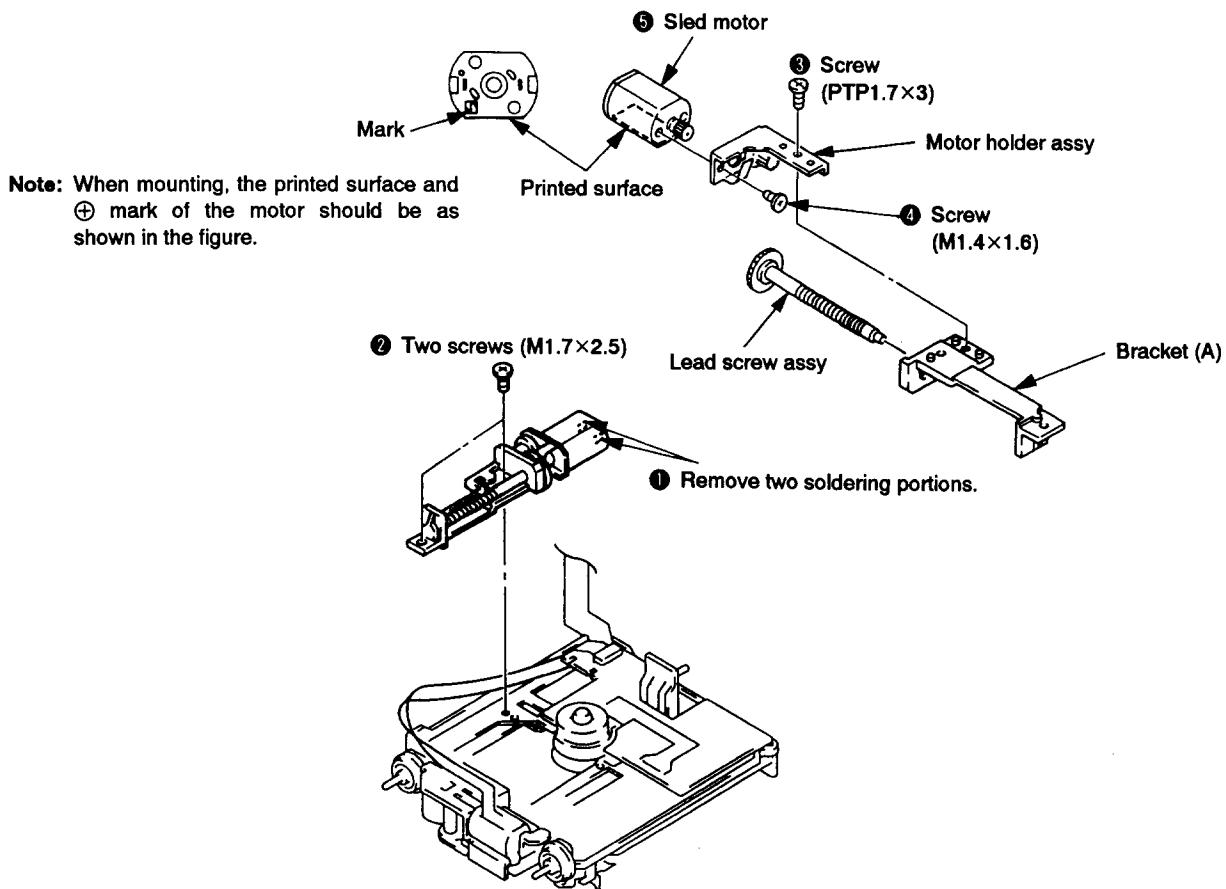
2-12-1. HOLDER ASSY AND MAIN SLIDER ASSY REMOVAL



2-12-2. HOLDER ASSY AND MAIN SLIDER ASSY INSTALLATION

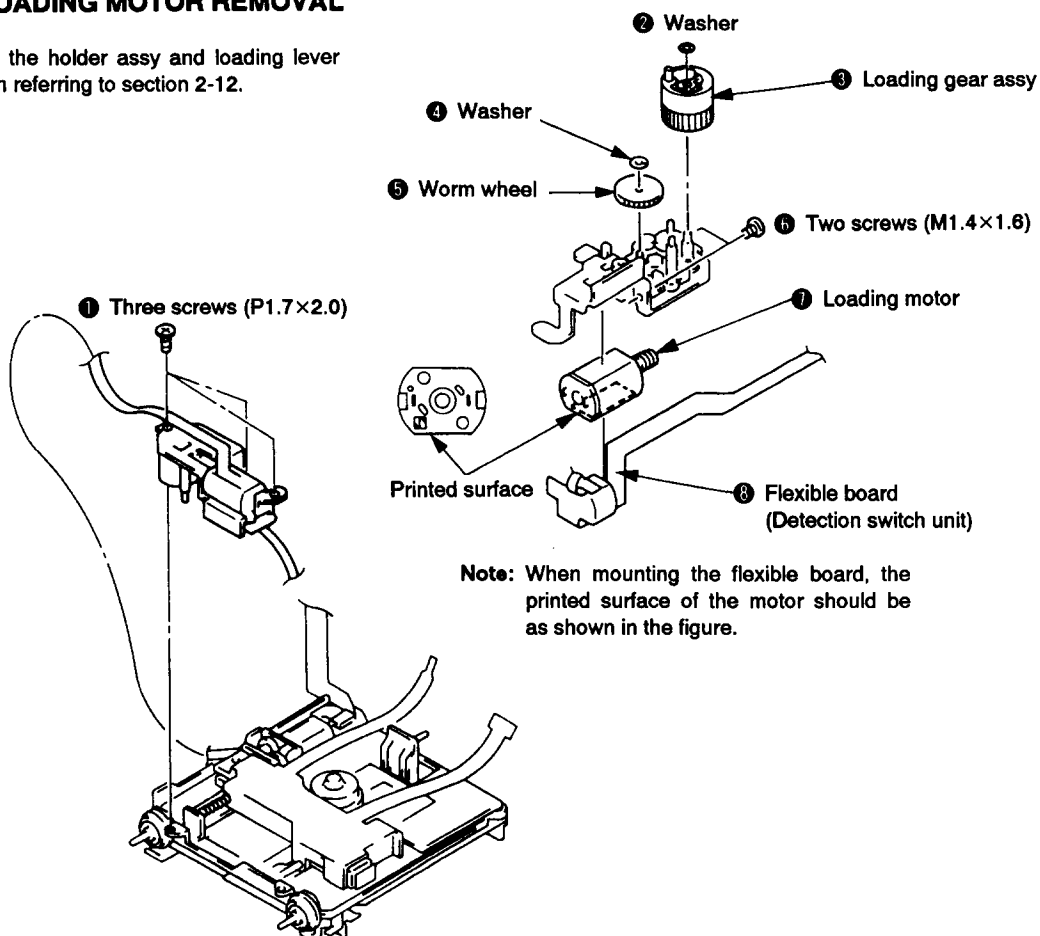


2-13. SLED MOTOR REMOVAL

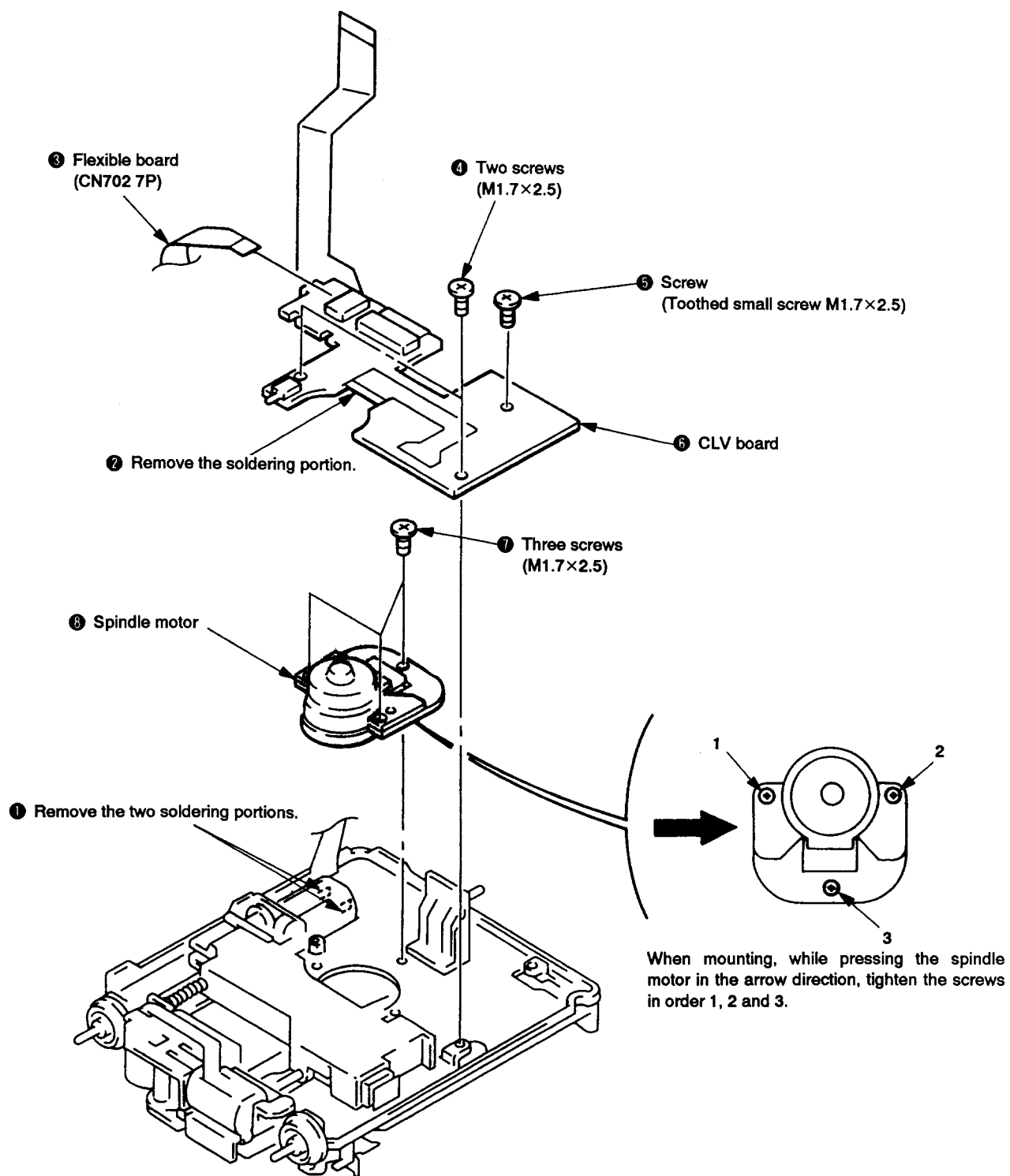


2-14. LOADING MOTOR REMOVAL

※ Remove the holder assy and loading lever assy with referring to section 2-12.



2-15. SPINDLE MOTOR REMOVAL



SECTION 3

IC PIN FUNCTIONS

IC601 EFM/ACIR ENCODER/DECODER (CXD2525R)

* (3) of I/O is state output and (A) is analog output.

Pin Name	Signal Name	I/O	Function
1	MDP	O (3)	Spindle motor servo control
2	MDS	O (3)	Spindle motor servo control
3	EFMI	I	Playback EFM input
4	ASY	O	Playback EFM full-swing output
5	LOCK	O	Spindle servo (CLV) lock state monitor. Locks at "H".
6	VCOO	O	EFM decoder analog PLL oscillation output (196Fs=8.6436 MHz)
7	VCOI	I	EFM decoder analog PLL oscillation input (196Fs=8.6436 MHz)
8	TEST1	I	Test pin. Normally GND.
9	PDO	O (3)	EFM decoder analog PLL phase comparison output
10	VSS	—	Digital GND
11	EFMO	O	EFM output during recording
12	ATER	O	ADIP CRC flag output. "H" when error.
13	CNIN	I	Track jump number count signal input
14	SENS	O (3)	Internal status output pin for the serial bus address
15	SYPL	I	SQSY, ADSY, DQSY, MQSY polarity switching input pin. Active high when "H". (to GND)
16	FILO	O (A)	Digital PLL master PLL filter output
17	FILI	I	Digital PLL master PLL filter input
18	PCO	O (3)	Digital PLL master PLL phase comparison output
19	AVSS	—	Analog GND
20	CLTV	I	Digital PLL master PLL VCO control voltage input
21	AVDD	—	Analog power supply
22	XRST	I	System reset input. Active low
23	REC	I	Decoder when "L" and encoder when "H"
24	TEST8	I	Test pin. Normally GND
25	SCLK	I	Serial bus clock input
26	XLAT	I	Serial bus latch input
27	SWDT	I	Serial bus writing data input
28	SRDT	O (3)	Serial bus reading data output
29	ADSY	O	ADIP sync output
30	SQSY	O	Sub code Q sync output
31	VDD	—	Digital power supply
32	DQSY	O	Sync (SCOR) output of sub code Q of the digital in U-bit CD format
33	TEST7	O	Open
34	DTI	I	Recording audio signal input
35	DTO	O (3)	Playback audio signal output. High impedance during recording
36	C2PO	O	PLayback: C2PO. Digital REC: D, In-VFLAG. Analog REC: 0
37	BCK	O	2.8224 MHz output (MCLK system)
38	XBCK	O	BCK reverse output (MCLK system)
39	LRCK	O	44.1 kHz (=Fs) (MCLK system)
40	WDCK	O	88.2 kHz (MCLK system)

Pin Name	Signal Name	I/O	Function
41	FS4	O	176.4 kHz (MCLK system)
42	GTOP	O	Opens the sync protection window when "H" (INPUT EFM SYNC monitor output) (not used)
43	XUGFS	O	Unguarded frame sync at "L" (INPUT EFM SYNC monitor output) (not used)
44	XPLCK	O	EFM decoder PLL clock output (98Fs=4.3218MHz)
45	GFS	O	Frame sync OK at "H" (INPUT EFM SYNC monitor output)
46	EPDO	O (3)	EFM encoder external PLL phase comparison output. Freq.: low → "H"
47	RFCK	O	7.35 kHz output (MCLK system)
48	EVC1	I	EFM encoder external PLL oscillation input (196 Fs=8.6436 MHz)
49	EVCO	O	EFM encoder external PLL oscillation output (196 Fs=8.6436 MHz)
50	VSS	—	Digital GND
51	MCLK	O	22.579 MHz output. Duty will not be protected.
52	XTAI	I	Crystal oscillation input (512 Fs=22.5792 MHz)
53	XTAO	O	Crystal oscillation output (512 Fs=22.5792 MHz)
54	TEST9	I	Fixed at "L"
55	MVCI	I	Digital-in PLL oscillation input (512 Fs=22.5792 MHz)
56	MVCO	O	Digital-in PLL oscillation output (512 Fs=22.5792 MHz)
57	TEST2	O	Fixed at "Open"
58	DIPD	O (3)	Digital PLL phase comparison output. Freq.: low → "L"
59	RAOF	O	RAM overflow output (Monitor output of decoder)
60	MT3	O	Playback corrected state monitor output
61	MT2	O	Playback corrected state monitor output
62	MT1	O	Playback corrected state monitor output
63	MT0	O	Playback corrected state monitor output
64	WFCK	O	7.35 kHz output (EFM decoder PLL system during playback, EFM encoder PLL system during recording)
65	DIN	I	Digital audio input pin
66	MD2	I	Digital audio out ON/OFF pin. ON when "H"
67	DOUT	O	Digital audio output pin
68	DIDT	O	Audio data output pin of the digital audio input pin
69	DODT	I	16-bit data input pin for the digital audio output
70	DOVF	I	Validity flag input pin for the digital audio
71	VDD	—	Digital power supply
72	TEST3	I	Fixed at "L"
73	TEST4	O	Fixed at "Open"
74	TEST5	I	Fixed at "L"
75	TEST6	I	Fixed at "L"
76	FMCK	I	ADIP reading clock input (6.3 kHz) (TTL Schmidt input)
77	FMDT	I	ADIP data input (TTL Schmidt input)
78	ADFG	I	ADIP carrier signal input (20.05 kHz) (TTL Schmidt input)
79	FSW	O (3)	Spindle motor output filter switching output. "Z" when CLV-P. Others: "L"
80	NON	O	Spindle motor ON/OFF control output. ON when "H"

- Note:**
- XUGFS is a frame sync obtained from the EFM signal and is a negative pulse. Signal before sync protection.
 - PLL is made for XPLCK so that changes in the reversion and falling edge of the EFM PLL clock and the EFM signal match.
 - The GFS signal becomes "H" when the frame sync and interpolation protection timing match.
 - C2PO is a signal which shows the error state of the data.
 - RAOF is a signal generated when the 32K RAM exceeds the $\pm 4F$ jitter margin.

IC602 Shockproof Memory Controller (CXD2526Q)

Pin Name	Signal Name	I/O	Function
1	A14	O	When RMSL is H: SRAM address bus A14. When RMSL is L: WFFUL (Note) (not used)
2	A15	O	When RMSL is H: SRAM address bus A15. When RMSL is L: RFEMP (Note) (not used)
3	A16	O	When RMSL is H: SRAM address bus A16. When RMSL is L: WFOVF (Note) (not used)
4	A17	O	When RMSL is H: SRAM address bus A17. When RMSL is L: WDTM (Note) (not used)
5	A18	O	When RMSL is H: SRAM address bus A18. When RMSL is L: ZERO (Note) (not used)
6	A19	O	When RMSL is H: SRAM address bus A19. When RMSL is L: MDTSC (Note) (not used)
7	A20	O	When RMSL is H: SRAM address bus A20. When RMSL is L: CMPSY (Note) (not used)
8	LRCK	I	LRCK input from the EFM encoder/decoder
9	BCK	I	BCK input from the EFM encoder/decoder
10	C2PO	I	C2PO input from the EFM decoder
11	DATA	I/O	Input/output data from the decoder during playback and that to the encoder during recording
12	VSS	—	GND
13	TEST	I	Test pin. Normally fixed at "L"
14	XRST	I	Reset input. Resets when "L"
15	MIN	I	External input monitor signal input pin. Inputs the signal to be monitored
16	SRDT	(HiZ) O	Microprocessor serial data output pin "Hi-z" when the CXD2526 read register is not selected
17	SWDT	I	Microprocessor serial data input pin
18	XSLT	I	Microprocessor serial data latch signal input pin
19	SCK	I	Microprocessor serial data shift lock input pin
20	SCTX	I	Data output enable signal input pin in the recording mode
21	RCPB	I	"L": Playback mode, "H": Recording mode
22	WRMN	I	"H": Write mode, "L": Monitor mode
23	SBMN	I	"H": Records the input signal according to the SDCT. "L": Records according to the DCT
24	XINT	O	Interrupting request output pin. "L" when the interrupting status is generated
25	MDSY	O	Input data MD sync detection signal
26	MEMFUL	O	"H" when the main data area is full with data
27	MEMEMP	O	"H" when the main data area is empty
28	UNDER	O	"H" when $RMS < THUND$
29	OVER	O	"H" when $RMS \geq THOVR$
30	ERWR	O	"H" when the data which C2PO is effective is written in the RAM
31	BTOV4	O	"H" when $BCT \geq 400$ (Hex)
32	TXST	O	"H" when data is transmitted
33	VDD	—	System power supply
34	BUSY	I/O	"H" when RAM is accessed
35	ZZ2	I	Test signal. Fixed at "H"
36	ZZ1	I	Test signal. Fixed at "H"
37	ZZ0	I	Test signal. Fixed at "H"
38	XALT	O	Data ready or latch signal to CXD2527R
39	ADT1	I	Pin for data input from CXD2527R
40	ADTO	O	Pin for data output to CXD2527R
41	ACK	O	Pin for data input/output clock output to CXD2527R
42	AC2	O	Pin for output data C2PO output to CXD2527R
43	XRQ	I	Pin for data request signal input from CXD2527R

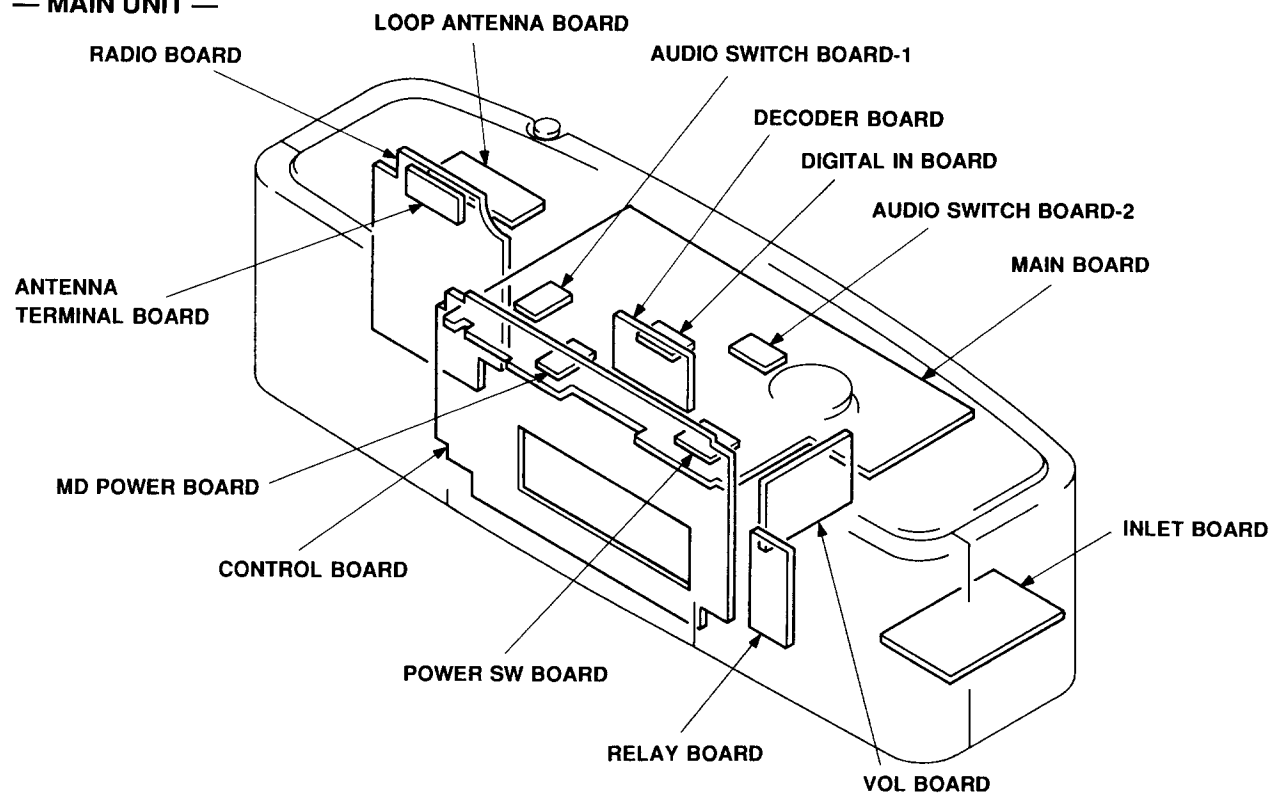
Pin Name	Signal Name	I/O	Function
44	SDCK	I	External sub data I/F shift clock input (to GND)
45	SBDT	I/O	External sub data I/F data output pin in the playback mode and the data input pin in the recording mode
46	XWT	O	External sub data I/F wait signal. Must not transmit the clock for reading the new data at "L" (not used)
47	SRDY	O	External sub data I/F access permission signal. Ignores the clock for sub data R/W if it is transmitted at "H" (not used)
48	MCK	O	128 fs output pin (not used)
49	F256	O	256 fs output pin (not used)
50	XTLO	O	System clock output pin (22.5792 MHz) (not used)
51	XTLI	I	System clock input pin (22.5792 Mhz)
52	VSS	—	GND
53	TEST	I	Fixed at "L"
54	RMSL	I	External RAM select pin. "H": SRAM. "L": DRAM
55	ERR	I/O	C2PO input/output pin when EXTC2R is "H"
56	D7	O	SRAM data line D7 when RMSL is "H". Test signal when "L". (not used)
57	D4	I/O	RAM data bus D4 when RMSL is "H". Test signal when "L".
58	D0	I/O	RAM data bus D0
59	D1	I/O	RAM data bus D1
60	D3	I/O	RAM data bus D3
61	D2	I/O	RAM data bus D2
62	XCAS	I/O	DRAM $\overline{\text{CAS}}$ output when RMSL is "L". Data bus D6 when "L"
63	XOE	O	RAM output enable
64	A10	O	RAM address bus A10 (not used)
65	XWE	O	RAM write enable
66	XRAS	I/O	DRAM $\overline{\text{RAS}}$ output when RMSL is "L". Data bus D5 when "H"
67	A11	O	RAM address bus A11 (not used)
68	A9	O	RAM address bus A9
69	A0	O	RAM address bus A0
70	A1	O	RAM address bus A1
71	A2	O	RAM address bus A2
72	A3	O	RAM address bus A3
73	VDD	O	System power
74	A8	O	RAM address bus A8
75	A7	O	RAM address bus A7
76	A6	O	RAM address bus A6
77	A5	O	RAM address bus A5
78	A4	O	RAM address bus A4
79	A12	O	RAM address bus A12 when RMSL is "H". CS output when "L" (not used)
80	A13	O	RAM address bus A13 when RMSL is "H". SYOK output when "L" (not used)

Note: WFFUL: Becomes "H" when the writing FIFO becomes full.
RFEMP: Becomes "H" when the reading FIFO becomes empty.
WFOVF: Becomes "H" when the writing FIFO becomes overflow.
WDTM: Outputs the window timing inside the D1 clock.
ZERO: Outputs "H" when BCT is 0.
MDTSC: Becomes "H" when the input data header selector is 00 to 1F and "L" at other times.
CMPSY: Interpolation sync timing.

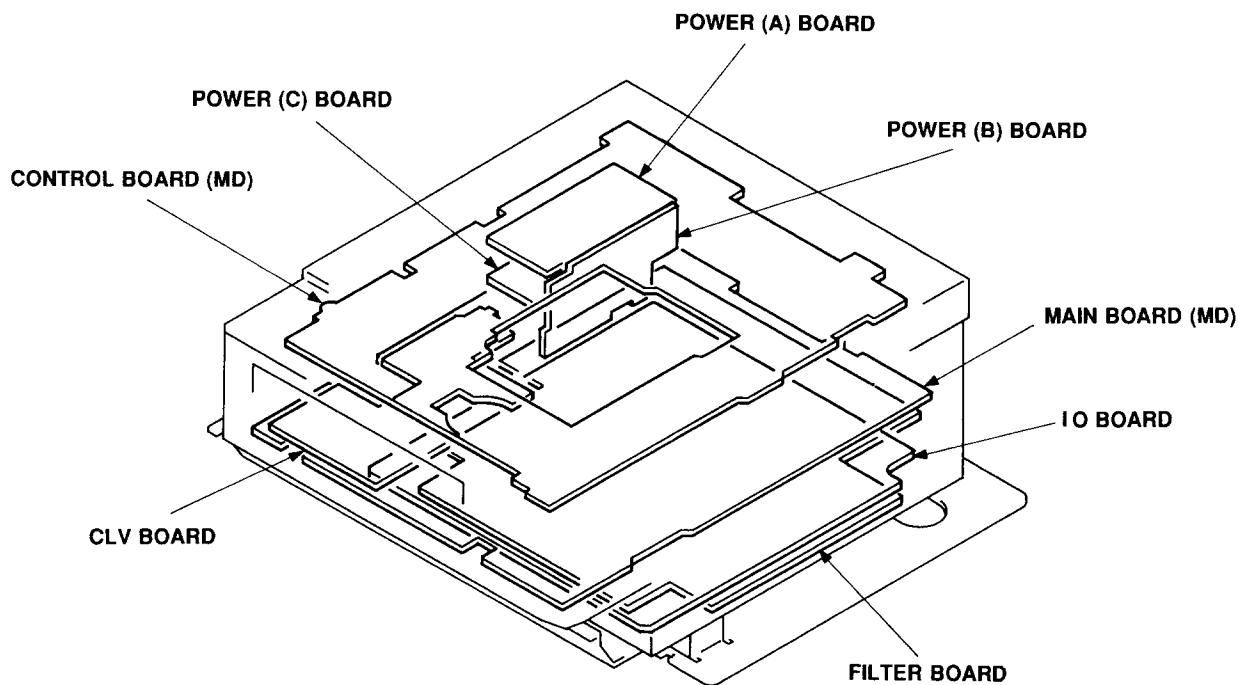
SECTION 4 DIAGRAMS

4-1. CIRCUIT BOARDS LOCATION

— MAIN UNIT —

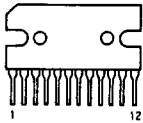


— MD BLOCK —

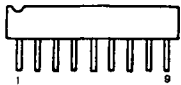


4-15. SEMICONDUCTOR LEAD LAYOUTS

BA3924-V3

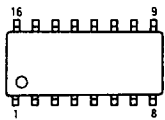


BA6208



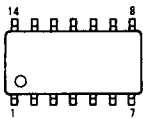
(Marking side view)

CD4052BCM



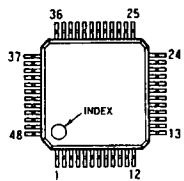
(TOP VIEW)

**CD4066BCM
TC74HC03AF-TP1**



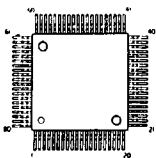
(TOP VIEW)

CXA1381R

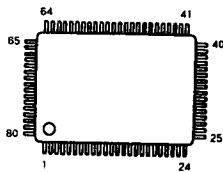


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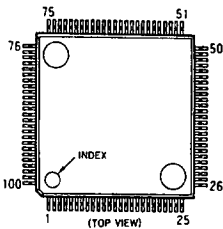
CXD2525R



**CXD2526Q
CX84120-CFDX100
CXP84120-010Q**

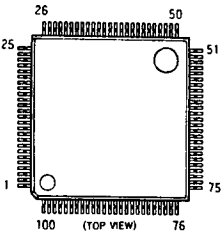


CXD2527R



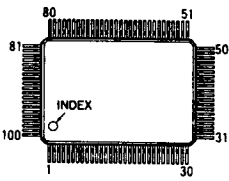
(TOP VIEW)

CXD2527R-1



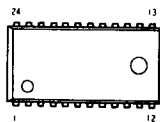
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CXP81740-603Q

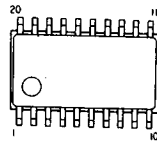


(TOP VIEW)

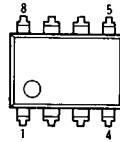
LA1831



**LC7216M
MC13020-MR**

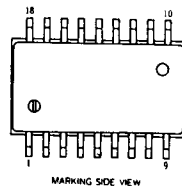


**M5216FP
M5218AFP
NJM2100D
NJM2100M**



(TOP VIEW)

RF5C62

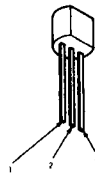


MARKING SIDE VIEW

S-80730AN



S-81250HG



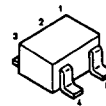
1 Ground
2 Input
3 Output

TA8176SN



(Marking side view)

TC7WU04F



**2SA1175
2SC2785
DTA114YS**



2SB1370



2SC4048



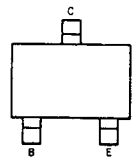
2SK679A



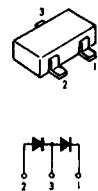
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DTC114YK
DTC114YU
DTC343TK**



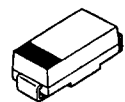
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UN221E**



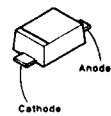
1SS226



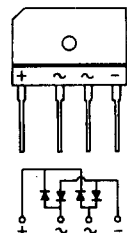
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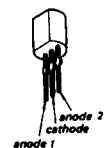
MA8068



RBV-602-01



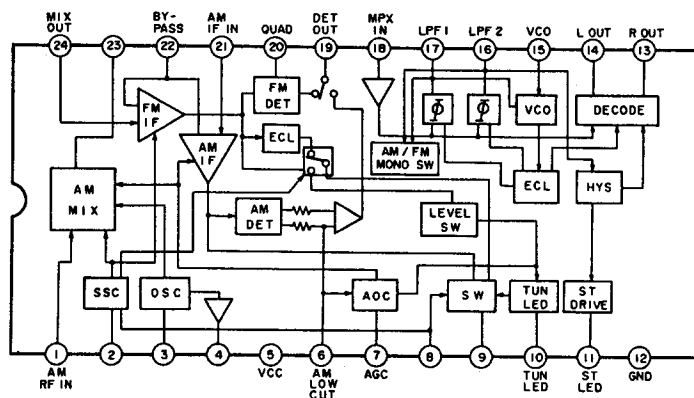
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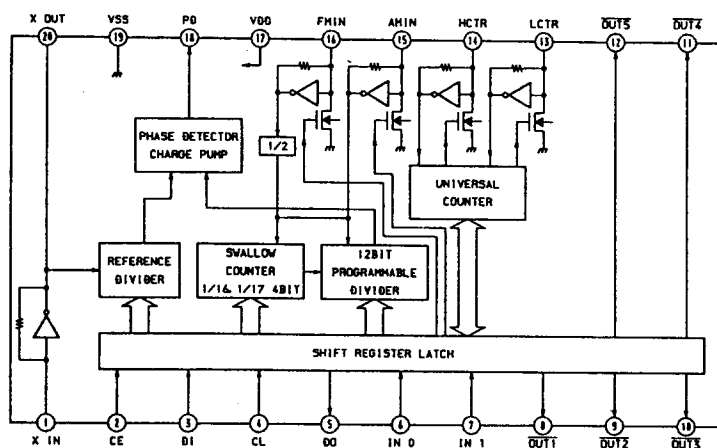
4-16. IC BLOCK DIAGRAMS

—MAIN SECTION—

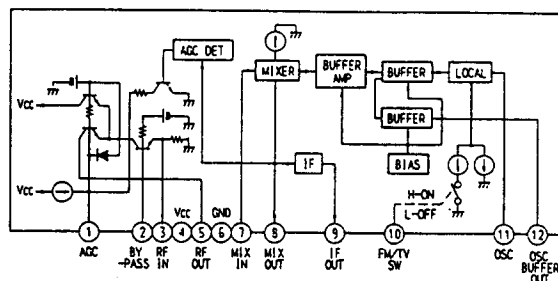
• RADIO BOARD IC1 TA2012N



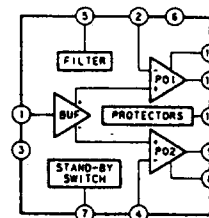
• RADIO BOARD IC2 LC7216M-TP-T1



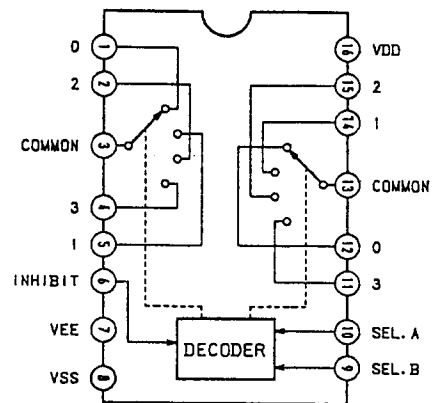
• RADIO BOARD IC3 TA8176SN



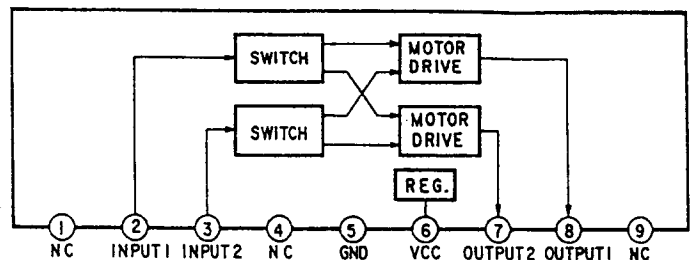
• MAIN BOARD IC101, 201 uPC2501H-1



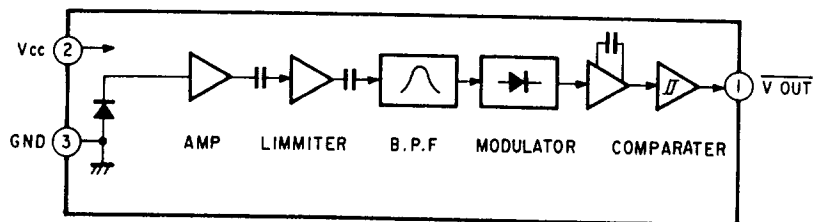
• MAIN BOARD IC301 CD4052BCM



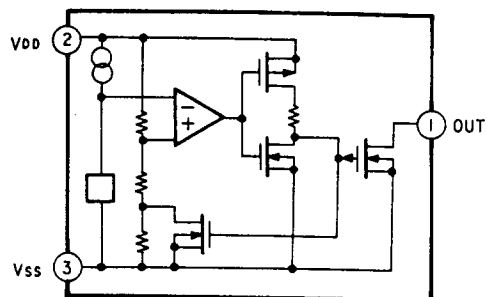
• VOL BOARD IC401 BA6208



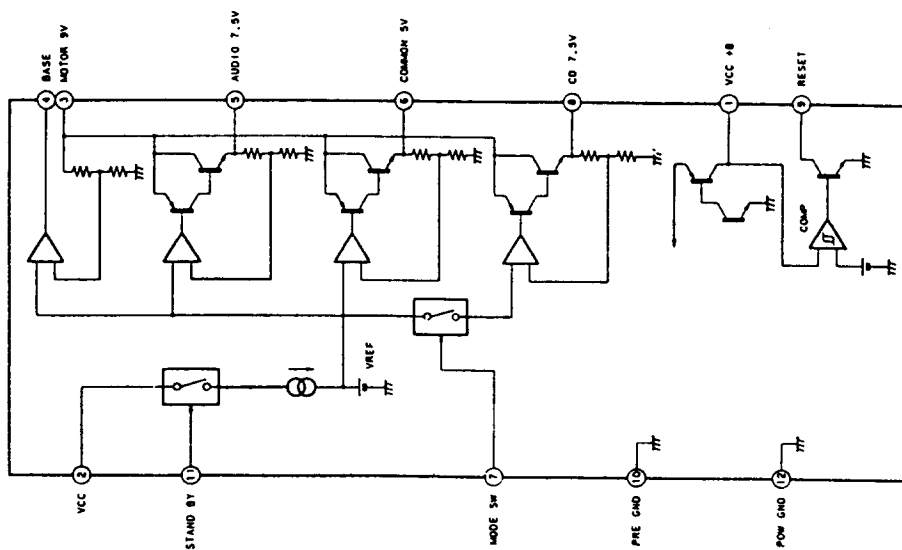
• CONTROL BOARD IC501 GP1U58XB



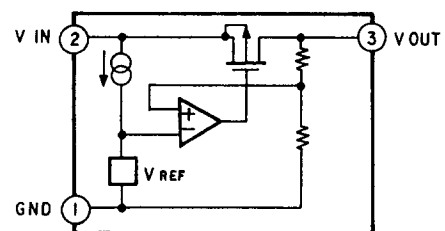
• MAIN BOARD IC802 S-80730AL-Z



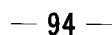
• MAIN BOARD IC901 BA3924-V3



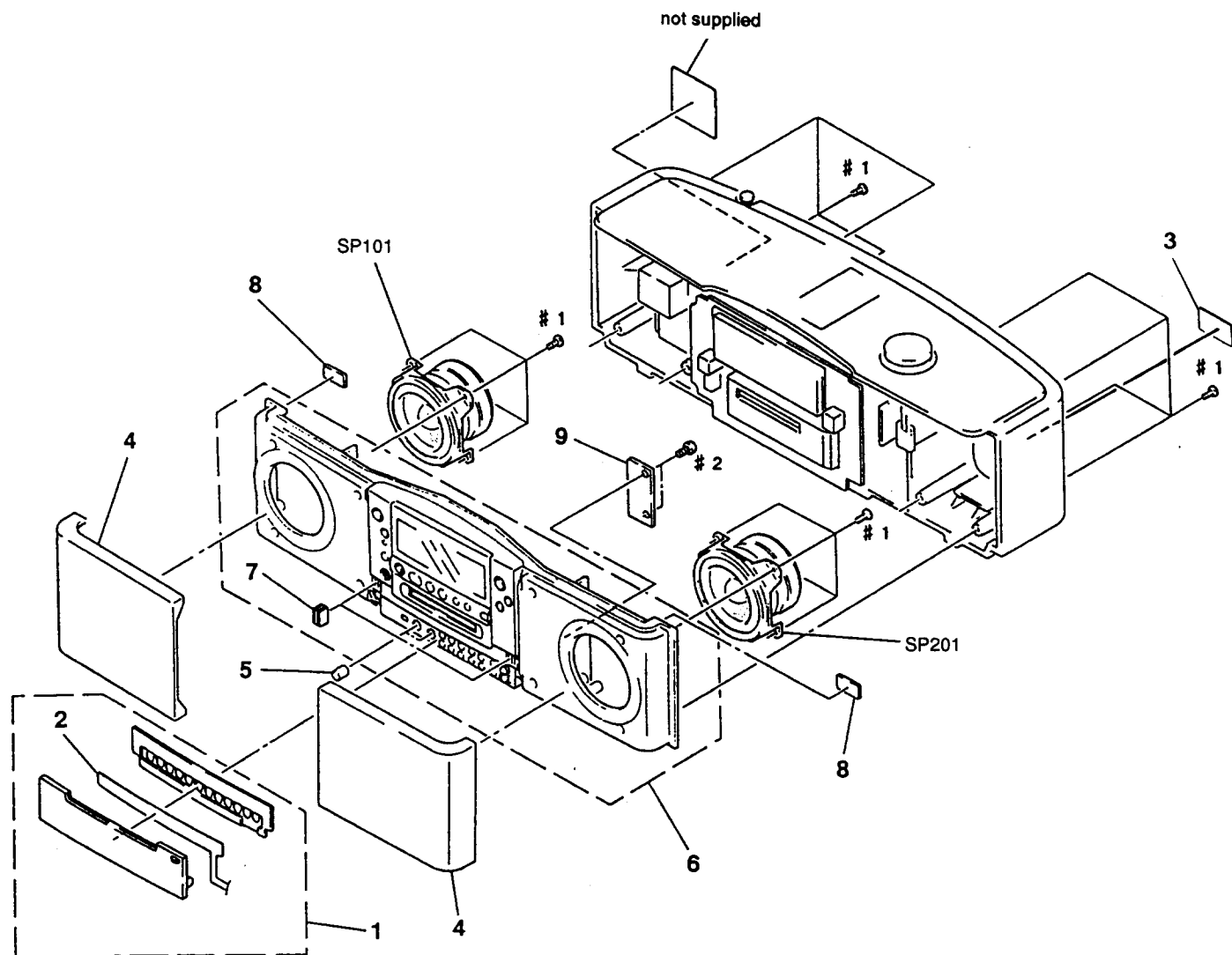
• MAIN BOARD IC902, 903 S-81250HG



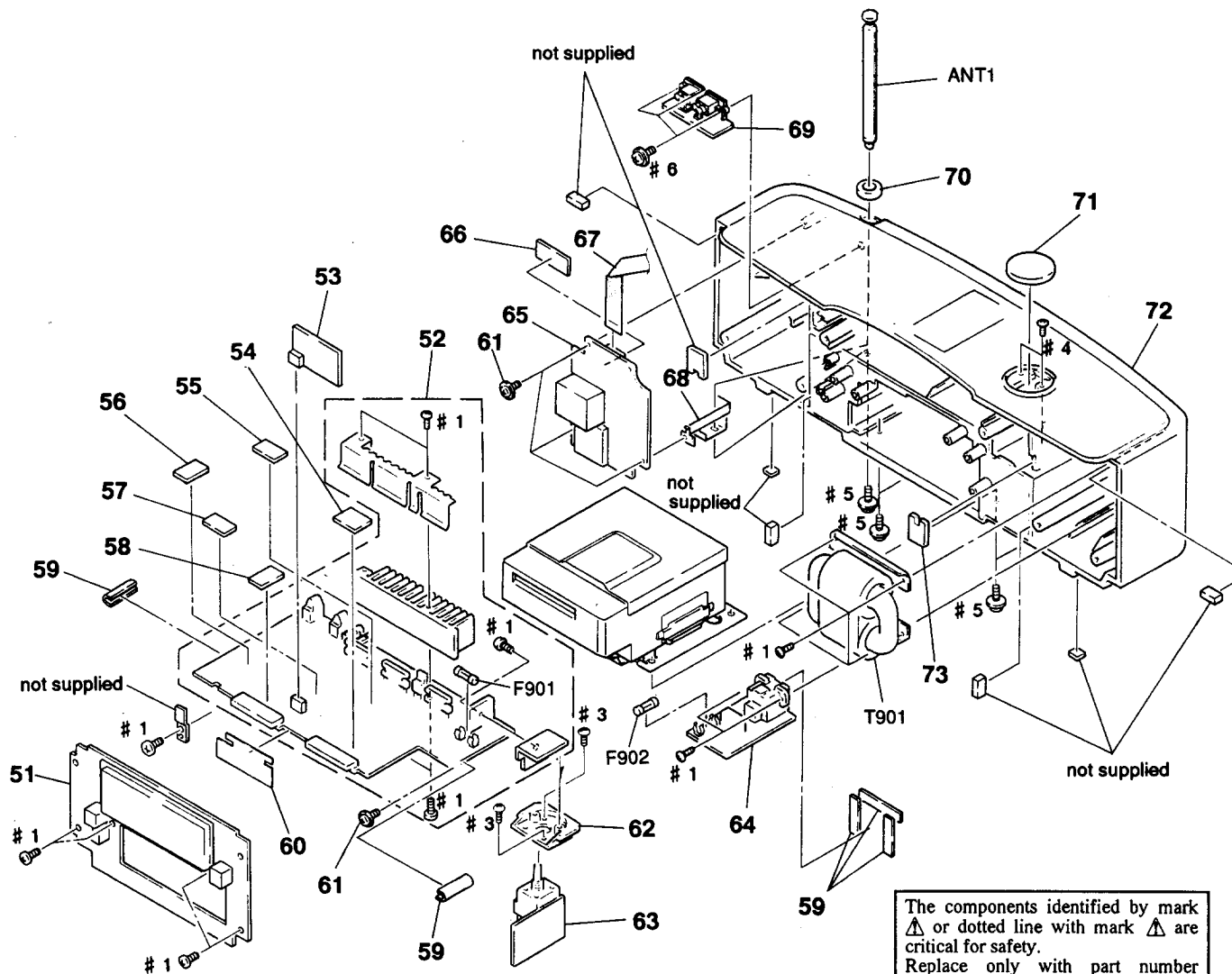
- MAIN BOARD IC501 CXA1381R






5-1. FRONT CABINET ASSEMBLY



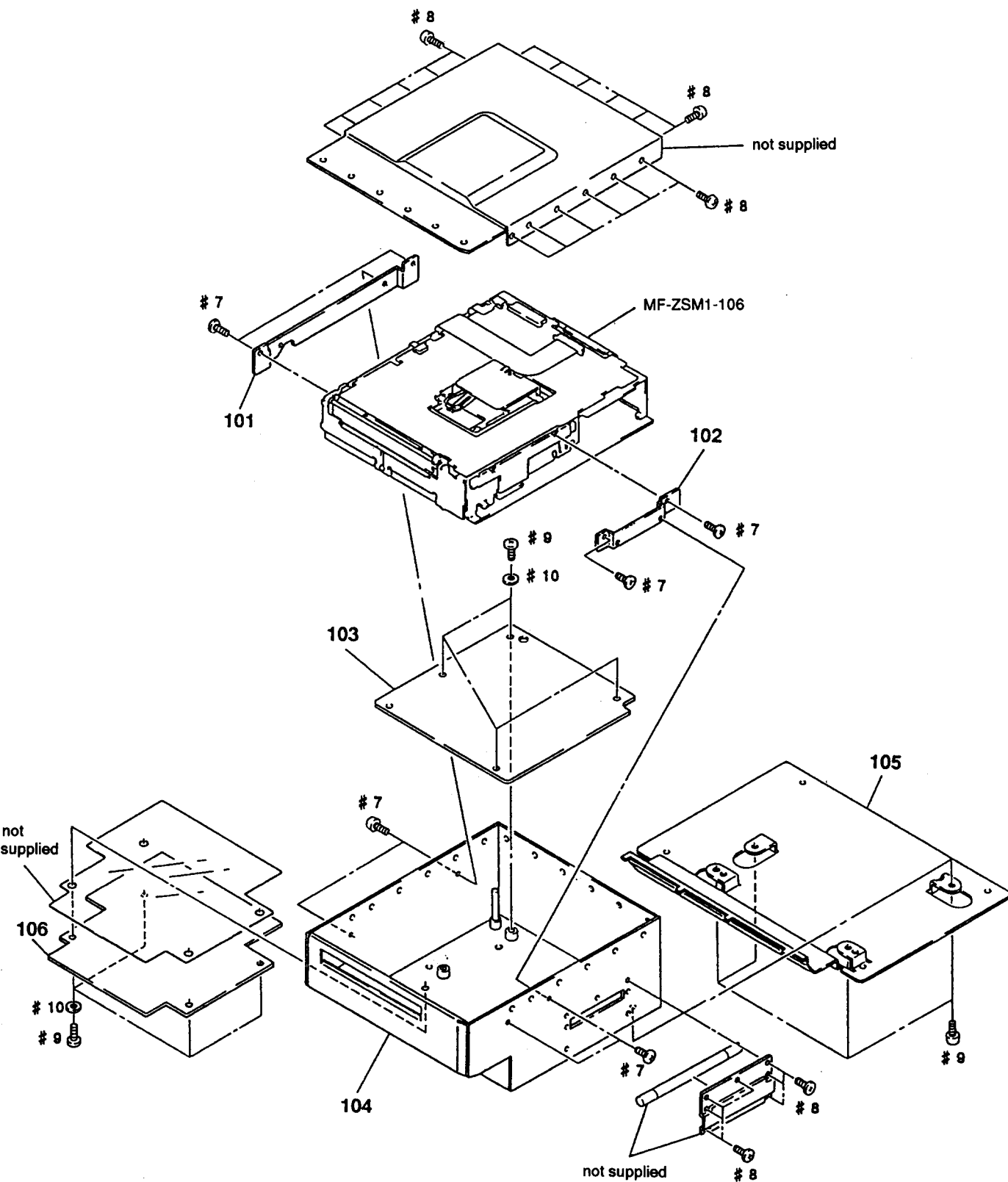
5-2. REAR CABINET ASSEMBLY



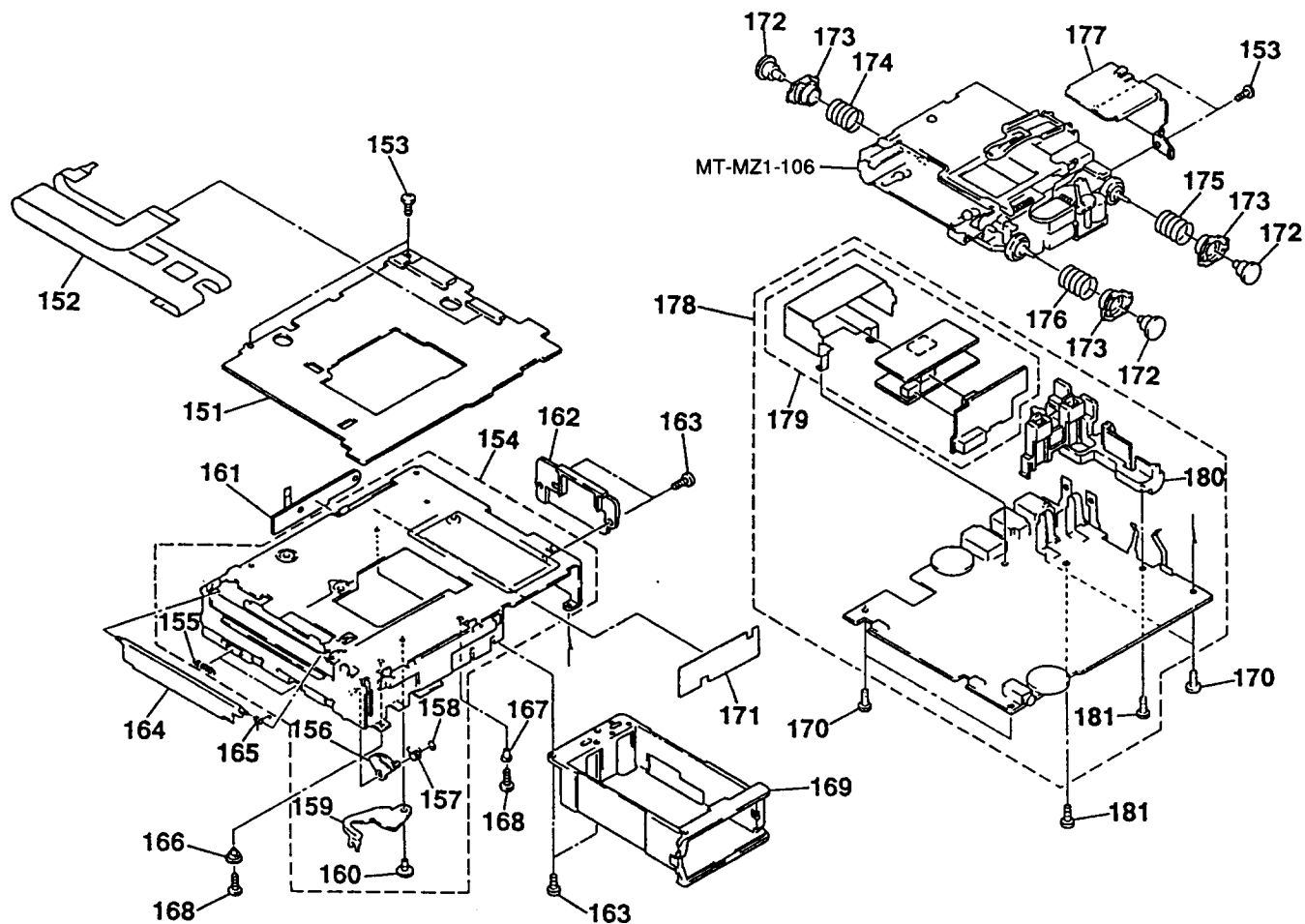
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

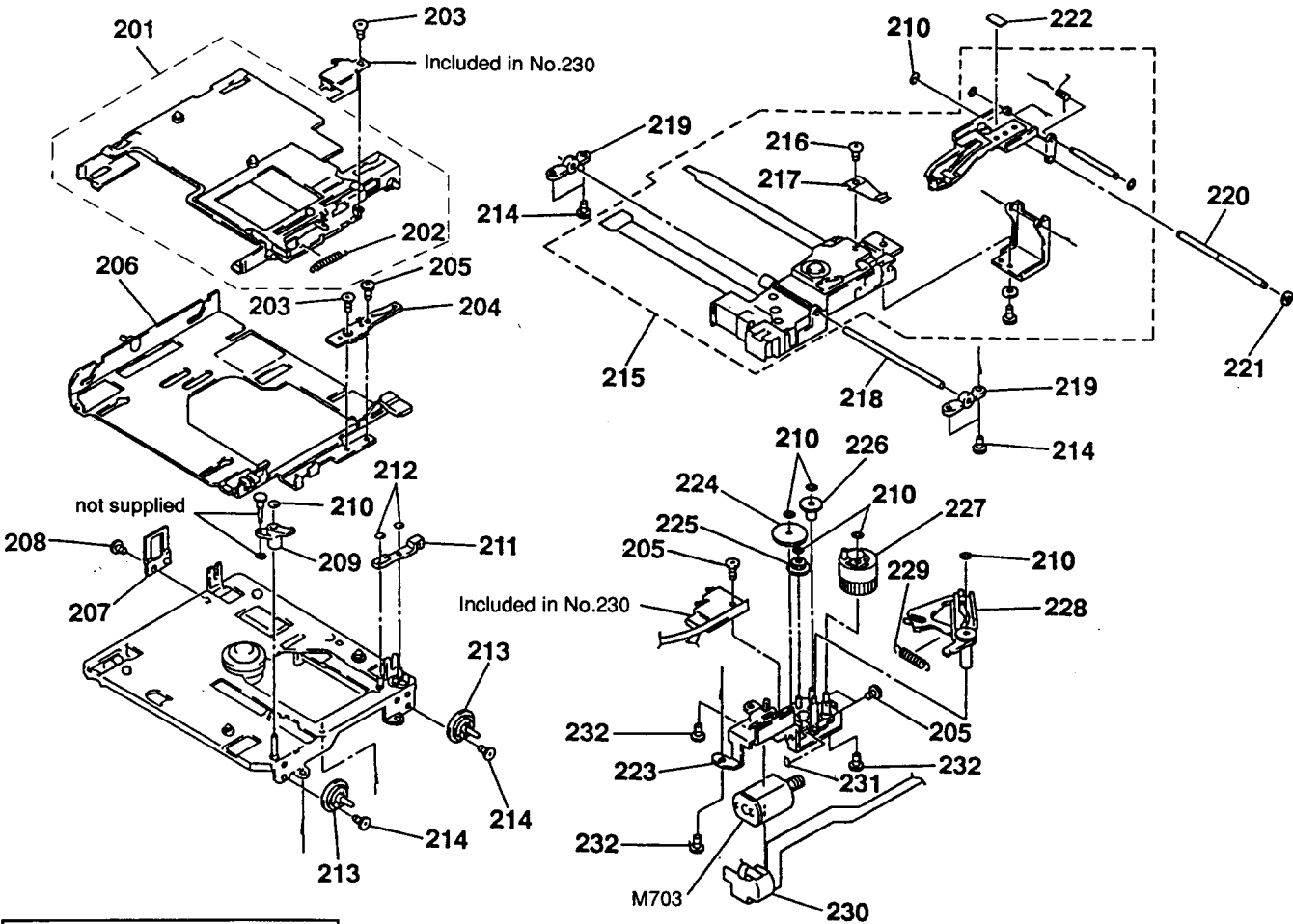
5-3. MD BLOCK ASSEMBLY






5-4. MECHANISM CHASSIS ASSEMBLY (MF-ZSM1-106)



5-5. MECHANISM DECK ASSEMBLY-1
(MT-MZ1-106)



The components identified by mark  or dotted line with mark  are critical for safety.
 Replace only with part number specified.

Les composants identifiés par une marque  sont critiques pour la sécurité.
 Ne les remplacer que par une pièce portant le numéro spécifié.

5-6. MECHANISM DECK ASSEMBLY-2
(MT-MZ1-106)

